DANSK MATEMATISK FORENING
MAT-NYT CALENDAR

This document is a hard copy of all entries in the electronic Mat-Nyt calendar of the Danish Mathematical Society covering the period

2004-1-1 – 2004-2-1.

Produced Thu Jan 5, 2006

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Mathematical Physics Seminar

A Hamiltonian model for linear friction

Stephan de Bievre, Villeneuve d'Ascq, France

Mon Jan 19 2004, 14:15 - 15:15

Abstract

I will present a Hamiltonian model of a particle coupled to a suitable wave field, describing the particle's environment, in which a simple version of Ohm's law is valid. When an external force is applied, the particle reaches asymptotically a constant speed proportional to the applied field. I will review the related literature, compare this phenomenon to the one of radiative dissipation, and indicate some of the many open problems

Organized by

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

ALGEBRA SEMINAR

The Inverse problem in Gröbner basis theory

Amelia Taylor, Assistant Professor, St. Olaf College USA

Mon Jan 19 2004, 15:15

Abstract

Given an ideal in a polynomial ring its initial ideal is easy to compute and is well studied using Gröbner basis theory. However, given a monomial ideal what can we say about the types of ideals it is the initial ideal for, that is do we know anything about the inverse problem for Gröbner basis theory? This question as stated is currently considered to be too broad, however progress has been made in determining when a monomial ideal is the initial ideal of a prime ideal and in most of the known cases we can we construct the prime ideal. I will give the history of this question and describe what is currently known, including my own results, and discuss the approaches to construction of the prime ideals, including any Gröbner basis theory that may be needed.

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Mathematical Physics Seminar

Fermi Golden Rule, Return to Equilibrium and the Weak Coupling Limit

Jan Derezinski, Warsaw University

Mon Jan 19 2004, 15:30 - 17:00

Abstract

The talk consists of 3 parts. 1. Mathematical formulation of the Fermi Golden Rule—2nd order perturbation computation of eigenvalues and resonances in a general setting, using the so-called Level Shift Operator 2. Return to Equilibrium–mathematical formulation of the fact that a generic quantum system in equilibrium admits only one stationary state. Elements of the proof (involving von Neumann algebras and Fermi Golden Rule) 3. Markovian limit of the reduced dynamics—another application of the Fermi Golden Rule–will be described. The relationship between 2. and 3. will be given.

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INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

ALGEBRA SEMINAR

Hypergeometric transformations and zeta values

Wadim Zudilin, Prof., Moscow

Mon Jan 26 2004, 15:15

Abstract

Organized by

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

MaPhySto Operator Algebra Seminar

Return to equilibrium - an application of W*-algebras to quantum statistical physics

Jan Derezinski, Warsaw University

Mon Jan 26 2004, 15:15

Abstract

The formalism of W^*-algebras provides a natural language to express one of the deepest ideas in physics, which says that generic infinitely extended systems at a given temperature should return to their equilibrium state. I will describe a class of systems where this can be proven rigorously. The subject involves various techniques coming from operator algebras (the standard form of a W^*-algebra, KMS states, Araki-Woods representations of CCR) as well as an analysis of a certain concrete operator, the so-called Liouvillean (using the positive commutator techniques and 2nd order perturbation theory—the Fermi Golden Rule).

Organized by Mikael Rørdam

(sduimada / sduimada)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Seminar

Marie Curie Seminar

Several speakers

Wed Jan 28 2004, 14:15 - 17:00

Abstract

Organized by Eva B. Vedel Jensen

(auimf / auimf)

MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

presentation of master thesis

The Geometry of Kerr Spacetimes

Andrew C. Mumm

Wed Jan 28 2004, 15:15 - 16:00

Abstract

The idea of a black hole is not a new one. In the late 1700s it was already known that by simple Newtonian methods we can consider objects so dense, that not even light can escape the gravitational field. But it is now a fact that the laws of Newton do not apply under these conditions and that the curvature of space and time must be taken into account in order to understand the precise nature of such peculiar behavior.

The subject of my thesis is the "fate of great masses of matter". More precisely, I shall be giving a semi-Riemannian description of the gravitational field that is believed to exist near uncharged black holes.

Som censor medvirker Lektor Hans Plesner Jakobsen, KU.

Organized by Steen Markvorsen

(dtumat / dtumat)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

ALGEBRA SEMINAR

The set of semidualizing complexes is a metric space.

Sean Sather-Wagsatff, NSF Postdoctoral Research Fellow, University of Illinois, Urbana Champaign, US

Wed Jan 28 2004, 15:15

Abstract

We demonstrate how the set of (shift isomorphism classes of) semidualizing complexes over a Noetherian local ring can be given the structure of a metric space. We describe the behavior of the metric under standard operations. This is joint work with Anders Frankild.

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

STATISTICS SEMINAR

Inhomogeneous spatial point processes - with a view to space-time modelling

Eva Vedel Jensen

Thu Jan 29 2004, 14:15

Abstract

In the lecture, I will review recent models for inhomogeneous spatial point processes. The focus is on models derived from homogeneous Markov point processes. Particular attention will be given to inhomogeneous models induced by local scaling. Statistical inference on locally scaled point processes will be described and it will be discussed how to construct a dynamic version of the local scaling model.

Organized by Søren Asmussen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Topology Seminar

K-theory and the representations of loop groups
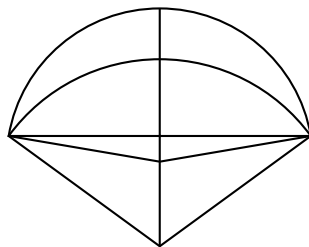
Mike Hopkins (M.I.T.)

Fri Jan 30 2004, 13:15

Abstract

Organized by Ib Madsen

(auimf / auimf)

DANSK MATEMATISK FORENING
MAT-NYT CALENDAR

This document is a hard copy of all entries in the electronic Mat-Nyt calendar of the Danish Mathematical Society covering the period

2004-2-1 – 2004-3-1.

Produced Thu Jan 5, 2006

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

The range of certain augmented invariants

Søren Eilers, MA

Wed Feb 4 2004, 15:15

Abstract

In various branches of classification theory one needs to consider K-theory with coefficients in order to obtain complete invariants. This has been understood for several years, but until now, not much has been known about the range of such invariants. I will present recent results obtained jointly with Andrew Toms which shed light on the "classical" case of so-called AD algebras, and even more recent results on purely infinite C*-algebras which are equally obscure.

Organized by

(kuimf / kuimf)

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

seminar

On metaplectic forms with special reference to the cubic case and to the Whittaker functions related.

Nikolai Proskurin, Skt. Petersburg

Thu Feb 5 2004, 15:15 - 17:00

Abstract

By metaplectic forms we understand automorphic forms with certain factors of automorphy constructed by means of residue symbols. The classical example is the quadratic theta function, whose automorphy properties are known after Jacoby. That is a metaplectic form of degree 2. To define metaplectic forms of higher degree one needs factors of automorphy discovered by T. Kubota in 1965 and (in more general context) by Bass, Milnor and Serre in 1967. By studying metaplectic forms we find higher degree analogues of classical theta series. One of them is the Kubota-Patterson cubic theta function studied in details by S.J. Patterson in 1977. The theory we talk about gives rise to solution of two old problems. That are Kummer's problem on cubic Gauss sums and the congruence subgroup problem for general linear and symplectic groups.

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

MATHEMATICS COLLOQUIUM

Loopholes to Results on G–Dimensions

**Lars Winther Christensen, Projekt Manager,
Cryptomathic A/S**

Tue Feb 10 2004, 15:15

Abstract

A classical duality construction goes af follows: Let M be an object in some category with a distinguished object D. The dual of M with respect to D is then the set of morphisms M –¿ D.

In the category of Abelian groups, one can choose Q/Z [the rationals mod the integers] as the distinguished object. This is known as Pontryagin duality and extends naturally to modules over a ring, where it gives a useful duality between injective and flat modules. (The talk will recap how and why.)

Over a commutative, Noetherian ring, Grothendieck studied duality with respect to a dualizing complex. For this distinguished object, it also makes sense to consider the opposite construction: morphisms from D into a module M. The derived functor RHom(D,-), together with its adjoint, gives a Morita-like equivalens between suitable categories.

Recently, this equivalence has provided a slick proof of a fundamental duality result from the theory of homological dimensions:

"Pontryagin duality also works between so-called G–injective and G– flat modules"

This result had hitherto avoided proof by standard methods. Indeed, the straighforward approach seems to be blocked by set theoretic obstructions.

Starting from a few basic definitions and constructions, the talk will motivate the interest in this result and outline the proof to illustrate the power and usefulness of the concepts of duality and equivalence.

Organized by

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Yang Mills Matrix Integrals

John Wheater, Oxford University

Wed Feb 11 2004, 16:15

Abstract

The motivation for studying Yang Mills matrix integrals comes from string theory but they present many interesting mathematical problems which can be studied in their own right. I will explain very qualitatively what the string theory connection is. The integrals are essentially a measure, not all of whose moments are finite; I will discuss the convergence properties both for the bosonic case and the supersymmetric one. Lastly I will discuss the properties of the Polyakov line

Organized by Jørgen Ellegaard Andersen

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

MPS seminar

A rigorous proof for the Landauer-Büttiker formula

Horia Cornean, Aalborg University

Thu Feb 12 2004, 11:00 - 12:00

Abstract

Recently, Avron and his co-workers reopened the question of quantum transport in mesoscopic samples coupled to particle reservoirs by semi-infinite leads. They give a rigorous analysis of the case when the sample undergoes an adiabatic evolution, which generates a current through the leads (the so called BPT formula). Using a tight-binding framework, we complement their work by giving a rigorous proof of the Landauer-Büttiker formula, which deals with the current generated by an adiabatic evolution on the leads. As it is well known in physics, these formulae link the conductance coefficients for such systems to the S-matrix of the associated scattering problem. As an application, we discuss the resonant transport through a quantum dot. The single charge tunneling processes are mediated by extended edge states simultaneously localized near several leads. This work is joint with A. Jensen and V. Moldoveanu

Organized by

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

MPS-seminar

Van Hove Hamiltonians—exactly solvable models of the infrared and ultraviolet problem

Jan Derezinski Dep. Math. Meth. in Phys. Warsaw University

Thu Feb 12 2004, 13:00 - 14:00

Abstract

I will analyse self-adjoint operators on the bosonic Fock space defined as quadratic polynomials in creation/annihilation operators. I will show that there exists 9 distinct classes of such operators exhibiting various behavior in the infra-red and ultra-violet regime. I will describe their scattering theory, which is quite unusual (from the point of view of people accustomed to Schrodinger operators). The analysis of these operators is helpful in understanding various phenomena in quantum field theory

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MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Faglighed og kompetencer

Sven Erik Larsen (Institut for Æstetiske Fag, AU)

Thu Feb 12 2004, 13:00 - 15:00

Abstract

I forlængelse af de fire 'professorrapporter' om dansk, naturfag, sprogfag og matematik i skolesystemet er kompetencebegrebet kommet på banen, i en vis grad til forskel fra faglighed. Kan den modsætning bruges til at udvikle nye begreber om faglighed og anvendelse i forhold til undervisning på tværs af fag og niveauer, eller betyder det en farlig relativering af faglig forankring af undervisning? Et af de vægtige udspil på området er rapporten om matematikundervisningen, der kom først, og derfor som den første prøvede kompetencebegrebet af.

Organized by

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Statistics Seminar

Levy processes in cones

Victor Perez-Abreu, CIMAT, Guanajuato, Mexico

Thu Feb 12 2004, 14:15

Abstract

In this lecture I will review recent results on Levy Processes in cones of Banach spaces. I will emphasize the role of the geometry of the space and the existence of a Pettis integral with respect to the Levy measure, in order to obtain a special Levy-Khintchine representation. Rates of growth of subordinators in a special type of Banach spaces will be presented, including laws of iterated logarithm.

Organized by Søren Asmussen

(auimf / auimf)

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

MPS seminar

On the smoothness of gap boundaries for generalized Harper operators

G. Nenciu, Bucharest

Thu Feb 12 2004, 14:15 - 15:15

Abstract

Various results concerning the smoothness of gap boundaries for Harper type operators are extended to a large class of "twisted integral operatos" in $L^2(Z^2)$. The results hold true also for analogous classes of operators in $L^2(R^n)$ and imply the fact that the gap boundaries for magnetic Schrodinger and Dirac operators are, up to a logarithmic factor, Lipschitz continuous in the magnetic field strenght. The proofs are based on gauge covariance and magnetic perturbation theory

Organized by

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Seminar

On the smoothness of gap boundaries for generalized Harper

G. Nenciu Bucharest

Thu Feb 12 2004, 14:15 - 14:15

Abstract

Various results concerning the smoothness of gap boundaries for Harper type operators are extended to a large class of "twisted integral operatos" in $L^2(Z^2)$. The results hold true also for analogous classes of operators in $L^2(R^n)$ and imply the fact that the gap boundaries for magnetic Schrodinger and Dirac operators are, up to a logarithmic factor, Lipschitz continuous in the magnetic field strenght. The proofs are based on gauge covariance and magnetic perturbation theory

Organized by Arne Jensen

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

seminar

Levy Processes in Cones of Operators

Victor Perez-Abreu Guanajuato, Mexico

Fri Feb 13 2004, 14:00 - 16:00

Abstract

Organized by Steen Thorbjørnsen

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Lévy Processes in Cones of Operators

Victor Perez-Abreu, CIMAT, Guanajuato, Mexico

Fri Feb 13 2004, 14:15

Abstract

In this lecture I will review recent results on Lévy Processes in cones of Banach spaces. I will emphasize the role of the geometry of the space and the existence of a Pettis integral with respect to the Lévy measure, in order to obtain the so-called special Lévy-Khintchine representation. Applications to the space of trace class operators and more general duals of C*-algebras will be pointed out.

Organized by

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Non-commutative spheres and elliptic curves

Ryszard Nest

Mon Feb 16 2004, 14:15

Abstract

Organized by NJL

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

MATHEMATICS COLLOQUIUM

Getting the message across - the statistical physics of error-correcting codes

David Saad, Professor, Aston University Birmingham

Tue Feb 17 2004, 15:15

Abstract

Error-correcting codes are of significant practical importance as they provide mechanisms for retrieving the original message after corruption during transmission. We study an important class of codes (LDPC-codes), using methods adopted from statistical physics, to discover their typical theoretical and practical limitations.

The talk will focus on the relevance of statistical physics to the study of error-correcting codes, different approaches that can be employed for carrying out the analysis, theoretical and practical differences between various code constructions and the insight gained from the analysis.

Organized by H.P. Jacobsen and F. Topsøe, sponsored by the Velux Visiting Professors Programme

(kuimf / kuimf)

MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

seminar

Towers of function fields with many rational places.

Peter Beelen

Wed Feb 18 2004, 15:15 - 16:00

Abstract

Since Goppa's discovery that algebraic curves can be used to construct useful error-correcting codes, there has been a wide interest in algebraic curves and families of algebraic curves having "many" rational points. In fact one of the things that has been achieved by using these codes, is an improvement of the Gilbert-Varshamov lower bound. Moreover, with a view to the application to coding-theory, one would like to have these families of curves as explicit as possible. By the work of Garcia and Stichtenoth in the 90's many such explit families are known, although much remains to be done. I will give an overview of the above developments.

Organized by Tom Høholdt

(dtumat / dtumat)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

Construction of Matrix Subordinators

Victor Perez-Abreu, CIMAT, Guanajuato

Wed Feb 18 2004, 15:15

Abstract

In the lecture I will review several recent constructions of infinitely divisible positive definite matrices. The focus will be on a class of transformations of the corresponding Lévy measures and their probabilistic interpretation.

Organized by Anders Rahbek

(kuimf / kuimf)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Khovanov Homology

Magnus Jacobsson Aarhus

Wed Feb 18 2004, 16:15 - 16:15

Abstract

This talk will be an introduction to a homology theory of links, invented by Mikhail Khovanov in 1999. It associates to every link diagram a bigraded chain complex whose graded Euler characteristic is the Jones polynomial. The chain complex is invariant up to chain equivalence under Reidemeister moves, so the isomorphism classes of the associated homology groups are link invariants. These invariants are stronger than the Jones polynomial. Also, Khovanov homology is a functor. Namely, any link cobordism induces a homomorphism between the homology groups of its boundary links, which is invariant (up to sign) under ambient isotopy of the link cobordism. This latter statement comes with an important caveat, which also will be mentioned in the talk, if time permits.

Organized by Jørgen Ellegaard Andersen

Lars Madsen 2004-02-09 16:14:12

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Er matematik og fysik grundlæggende forskellige?

Mogens Niss og Jens Højgaard Jensen (IMFUFA)

Thu Feb 19 2004, 13:00 - 15:00

Abstract

Som måske bekendt er der for nyligt lavet et større arbejde med beskrivelse af faget matematik i kompetencetermer på langs og tværs i uddannelsessystemet. Dette rejser spørgsmålet om det er muligt og ønskeligt at lave en tilsvarende beskrivelse af faget fysik. Seminaret vil lægge op til en diskussion af dette spørgsmål.

Organized by

(rucimfufa / rucimfufa)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

Specialeforedrag

Algebraic K-theory and local Chern characters

Esben Bistrup Halvorsen, stud. scient., Matematisk Afdeling

Thu Feb 19 2004, 16:30

Abstract

Lad M og N være endeligt frembragte moduler over en kommutativ, Noethersk, lokal ring R, sådan at M har endelig projektiv dimension og M tensor N har (Krull) dimension 0. Snitmultipliciteten $X(M, N)$ af M og N blev defineret af Serre som den alternerende sum af længderne af modulerne $Tor_i(M, N)$.

Det er blevet formodet, at følgende gælder.

(0) $\dim M + \dim N$ mindre lig $\dim R$. (1) $X(M, N) = 0$, hvis $\dim M + \dim N < \dim R$. (2) $X(M, N) > 0$, hvis $\dim M + \dim N = \dim R$.

I foredraget defineres Grothendieckgruppen $K_0(C)$ for kategorier C af komplekser. Når C kun indeholder moduler (dvs. komplekser koncentreret i grad 0), hvorpå $X(-, N)$ er defineret, bliver "afbildningen" $C \to K_0(C)$ universel mht. additivitet på kort-eksakte følger, og $X(-, N) : C \to Z$ vil derfor faktorisere gennem $K_0(C)$. Dette udnyttes i foredraget til at beregne snitmultipliciteten og bevise de tre formodninger i tilfældene $\dim N = 0, 1$. Det viser sig, at der er en sammenhæng mellem Grothendieckgrupper og lokale Chernkarakterer, som måske kan være til nytte ved en evt. generalisering af denne fremgangsmåde til højere dimensioner.

Organized by

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Topology Seminar

Representations and K-theory of Braid Groups

Professor A. Adem University of Wisconsin, Madison

Fri Feb 20 2004, 13:15 - 13:15

Abstract

Organized by Ib Madsen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

Power of tests for unit roots in the presence of a linear trend

Bent Nielsen, Nuffield College, University of Oxford

Mon Feb 23 2004, 15:15

Abstract

Dickey and Fuller (1981) suggested unit root tests for an autoregressive model with a linear trend and a fixed initial value. This model has nuisance parameters so later authors have often worked with a slightly different model with a random initial value in which nuisance parameters can be eliminated by an invariant reduction of the model. This facilitates computation of envelope power functions and comparison of the relative performance of different unit root tests. It is shown here that invariance arguments also can be used when comparing power within the model with fixed initial value. Despite the apparently small difference between the two models the relative performance of unit root tests turns out to be very different.

Organized by Anders Rahbek

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

MATHEMATICS COLLOQUIUM

The Fuglede conjecture and related problems

Gestur Olafsson, Louisiana State University

Tue Feb 24 2004, 15:15

Abstract

Organized by

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

OPERATOR ALGEBRA SEMINAR

A random matrix approach to: No projections in C*red(F2)

Hanne Schultz

Wed Feb 25 2004, 14:15

Abstract

Organized by Mikael Rørdam

(sduimada / sduimada)

MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

colloquium

The largest minimal blocking set in the projective plane of order eight.

Janos Barat

Wed Feb 25 2004, 15:15 - 16:00

Abstract

A projective plane of order n is a collection of $n^2 + n + 1$ points and lines such that each line consists of $n + 1$ points and any two points are contained in precisely one line. A blocking set in a projective plane is a set of points intersecting every line, but containing no line entirely.

A blocking set (BS) is said to be minimal if it is minimal with respect to set-theoretical inclusion. Usually we are interested in the smallest cardinality of a BS. Clearly, the complement of a small BS is a large BS, but not necessarily minimal. Hence also large minimal BS's are of interest.

Bruen and Thas proved that the size of a large minimal BS is bounded above by $n\sqrt{n} + 1$. This bound is sharp when n is a square number.

We consider the case $n = 8$, for which the upper bound is 23. It was conjectured by several people that a minimal blocking set with 23 elements does not exist in the projective plane of order 8. We show that this is false, and construct such a set. We also prove that this is combinatorially unique.

The proof techniques are both algebraic, combinatorial, and geometric.

This result was published in: J. Barat, S. Innamorati. Largest minimal blocking sets in PG(2,8). Journal of Combinatorial Designs Vol.11. Issue 3, (2003) 162–169.

Organized by Carsten Thomassen

(dtumat / dtumat)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Finite Group Actions on Moduli Spaces of Vector Bundles.

Frank Nasser University of Aarhus

Wed Feb 25 2004, 16:15 - 16:15

Abstract

Let X be a compact Riemann surface of genus greater than or equal to 2. The semistable holomorphic vector bundles on X of rank n and determinant L are parametrised by the moduli space $M(n, L)$. The Picard group of $M(n, L)$ is isomorphic to Z with a unique ample generator $K(n, L)$. The spaces $Z_k(n, L)$ of holomorphic sections in the k'th tensor power of $K(n, L)$ have been studied intensely, due to their central role in the gauge-theoretic approach to $2 + 1$ dimensional TQFT.

There is a natural action on $M(n, L)$ of the group $J^($n)(X)$ of n-torsion points in the Jacobian of X, gotten by tensoring with the corresponding line bundles. I define certain lifts of this action to $K(n, L)$ (and hence to $Z_k(n, L)$ and give a presentation of the group generated by such lifts. In the proces, a detailed study of the fixed point varieties for the action of $J^($n)(X)$ on $M(n, L)$ becomes necessary.

Organized by Jørgen Ellegaard Andersen

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Joint MaPhySto and Thiele workshop

Lévy Processes and Bases: Theory and Applications

Thu Feb 26 2004, 09:00 - Fri Feb 27 2004

Abstract

By a happy coincidence both Professor Mako Maejima and Professor Victor Peres-Abreu are visiting University of Aarhus in February 2004. Hence opportunity is taken to organize a two-day workshop on Lévy Processes and Bases: Theory and Applications.

ANYONE INTERESTED IS WELCOME TO PARTICIPATE - and if you would like to present a talk, you are very welcome to contact us.

Organized by

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG
AALBORG UNIVERSITET

Seminar

Hyperbolic equations, function spaces with exponential weights and Nemytskuj operators

Winfried Sickel, Friedrich Schiller Universität, Jena

Thu Feb 26 2004, 11:00

Abstract

The study of different problems in the theory of hyperbolic equations is based on function spaces of Gevrey type. Beside the original Gevrey classes it has been shown that classes defined by a decay condition in the Fourier image might be useful for proving a-priori estimates.

For obtaining the full abstract, we refer to the web-site mentioned below:

Organized by Jon Johnsen

(dmfeditor / dmfeditor)

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INSTITUT FOR MATEMATISKE FAG
AALBORG UNIVERSITET

Seminar

MCMC og malkekøer

Anders Gorst-Rasmussen, Dept. of Mathematical Sciences, Aalborg Univeristy

Thu Feb 26 2004, 13:00

Abstract

Markov Kæde Monte Carlo (MCMC) er et af de store ord i moderne statistik og er kort fortalt en effektiv måde at integrere komplicerede funktioner af mange variable på. Metoden er særlig nyttig i Bayesiansk inferens, hvor mange summariske størrelser kan estimeres ved integration.

Vi skal se MCMC anvendt i et lettilgængeligt eksempel, hvor man ønsker at vurdere formen på flowkurver for malkekøer (problemet udgjorde den praktiske del af mit mat3-projekt sidste efterår). Generelt giver dette anledning til et changepointproblem, hvor man har forskellige modeller i forskellige dele i malkeforløbet - og tidspunkterne, hvor modellen ændrer sig, selv er ukendte størrelser. "Gængse" estimationsmetoder er vanskelige at anvende i den slags problemer; men det viser sig, at en simpel Bayesiansk formulering og simulationsbaserede metoder giver en effektiv og generel måde at vurdere changepoints på.

Fokus i foredraget vil først og fremmest være på de konceptuelle aspekter, og det tekniske niveau forudsætter kun et begrænset kendskab til statistik.

Organized by P. Svante Eriksen

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

SEMINAR IN ANALYSIS

Multivariable Laguerre polynomials and representation theory

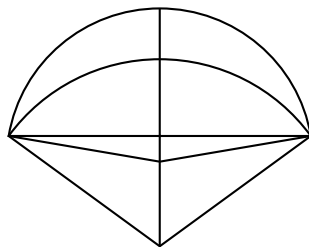## Gestur Olafsson, Louisiana State University

Thu Feb 26 2004, 15:15

Abstract

We explain the connection between the Laguerre functions, the Laguerre polynomials on the one side, and highest weight representations of Hermitian Lie groups on the other side. The representattion theory is used to derive differential equations and recursion relations.

Organized by

(kuimf / kuimf)

DANSK MATEMATISK FORENING
MAT-NYT CALENDAR

This document is a hard copy of all entries in the electronic Mat-Nyt calendar of the Danish Mathematical Society covering the period

2004-3-1 – 2004-4-1.

Produced Thu Jan 5, 2006

MAT-NYT

Danish Center for Applied Mathematics and Mechanics

Seminar

The Mechanics of Skin Injection

Professor Norman A. Fleck

Tue Mar 2 2004, 15:30

Abstract

The injection of skin by hypodermic needles and more recently by liquid jets is reviewed, with a comparison of their relative performance outlined. The underlying mechanisms by which skin and other soft solids are penetrated are described. A mechanical description of skin is given based on the notion of nodal connectivity. The difference in modulus of the dermis and of collagen fibres (factor of 1000) is traced to the fact that the collagen network deforms by local bending until it locks up at large elongations. The model predicts that the stress versus strain curve for skin scales with the Young's modulus of the collagen. To explore the assumptions of the model, experimental data are reported for the effect of strain rate upon skin response, using a split Kolsky bar. It is found that the shape of the stress versus strain curve is unchanged but the level of stress increases by an order of magnitude as the strain rate is increased from 0.001/s to 3000/s. This is consistent with the change in measured modulus of the skin. Micromechanical models are developed for the deep penetration of a soft solid by a flat-bottomed and by a sharp-tipped cylindrical punch. The soft solid is taken to represent mammalian skin and silicone rubbers, and is treated as an incompressible, hyper-elastic, isotropic solid described by a one term Ogden strain energy function. Penetration of the soft solid by a flat-bottomed punch is by the formation of a mode II ring crack that propagates ahead of the penetrator tip. The sharp-tipped punch penetrates by the formation of a planar mode I crack at the punch tip followed by wedging open of the crack by the advancing punch. For both modes of punch advance the steady-state penetration load is calculated by equating the work done in advancing the punch to the sum of the fracture work and the strain energy stored in the solid. For the case of a sharp penetrator, this calculation is performed by considering the opening of a plane strain crack by a wedge, using a finite element approach. Analytical methods suffice for the flat-bottomed punch. For both geometries of punch tip, the predicted penetration pressure increases with diminishing punch radius, and with increasing toughness and strain hardening capacity of solid. The penetration pressure for a flat-bottomed

punch is two to three times greater than that for a sharp-tipped punch (assuming that the mode I and mode II toughnesses are equal). The talk concludes with a comparison of the sharp-tipped injection model with the performance of a number of commercial liquid jet injectors. The model provides a useful prediction of the efficacy of each device.

Reference: Mechanisms of deep penetration of soft solids, O A Shergold and N A Fleck, To appear in Proc. Roy. Soc. Lond. A. The paper can be downloaded as a pdf file from http://www-mech.eng.cam.ac.uk/mmd/profiles/fleck/skin.html

Organized by Danish Center for Applied Mathematics and Mechanics

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MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

OPERATOR ALGEBRA SEMINAR

A prime C*-algebra that is not primitive (after N. Weaver)

Mikael Rørdam

Wed Mar 3 2004, 14:15

Abstract

Organized by Mikael Rørdam

(sduimada / sduimada)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Good properties of convolution algebras

Sandy Grabiner (Pomona College, California, pt University of Copenhagen)

Wed Mar 3 2004, 15:15

Abstract

We will discuss convolution algebras on the half-line R^+. The classical example is $L^1(R^+)$, but we are interested in the more general class of weighted convolution algebras $L^1(w)$ on R^+. We will discuss various striking properties that are known to hold for large classes of these algebras. For many of these properties no counterexamples are known, and weaker versions of the properties always hold. We are particularly particularly interested in properties of homomorphisms, but this will require us to also consider good properties of ideals, convergence, and semigroups.

Organized by Niels Jakob Laustsen

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

Nonstationary processes: some stationary approximations and statistical inference

Suhasini Subba Rao Tata, University of Heidelberg

Wed Mar 3 2004, 15:15

Abstract

In this talk we consider a general class of time-varying (tv) stochastic processes. This class of processes includes several models, for example the tvGARCH, tv Random coefficient GARCH and tv Random coefficient AR processes. For fixed time points we show that the time-varying random process can locally be approximated by a stationary process. Under slightly stronger regularity conditions, we define the derivative process and give a stochastic Taylor expansion of the time-varying process in terms of stationary processes. In the second half of the talk we consider statistical inference for the time-varying ARCH process. To estimate the parameters of the tvARCH process we consider a localised quasi-likelihood estimator and an online stochastic algorithm estimator. The asymptotic properties of both estimators are investigated and compared.

Organized by Anders Rahbek

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Hvornår er reel analyse reel? Konkret kompetencebeskrivelse af et matematikkursus

Niels Grønbæk (Matematisk Institut, KU)

Thu Mar 4 2004, 13:00 - 15:00

Abstract

Fokus på kompetencedimensionen må forventes at have pædagogiske og faglige konsekvenser, måske ikke mindst i traditionelle undervisningsforløb. Hvilke læringsproblemer adresseres med et kompetencefokus? Hvad er de adfærds- og holdningsmæssige konsekvenser hos studerende? hos lærere? Kan kompetencer måles? Sådanne spørgsmål vil blive belyst med baggrund i et udviklingsarbejde om et tredje semesters kursus i reel analyse på matematikuddannelsen ved Københavns Universitet.

Organized by

(rucimfufa / rucimfufa)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Statistics Seminar

A parsimonious and universal description of turbulent velocity increments

Jürgen Schmiegel Institut for Matematiske Fag, Aarhus Universitet

Thu Mar 4 2004, 14:00 - 14:00

Abstract

We discuss an analysis of the probability density function of turbulent velocity increments based on the class of normal inverse Gaussian distributions. It allows for a parsimonious description of velocity increments that covers the whole range of amplitudes and all accessible scales from the finest resolution up to the integral scale. The analysis is performed for three different data sets obtained from a wind tunnel experiment, a free-jet experiment and an atmospheric boundary layer experiment with Taylor-Reynolds numbers $R_\lambda = 80, 190, 17000$, respectively. The application of a time change in terms of the scale parameter δ of the normal inverse Gaussian distribution reveals some universal features that are inherent to the pdf of all three data sets.

This is joint work with Ole E. Barndorff-Nielsen and Preben Blæsild.

Organized by Søren Asmussen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

SEMINAR IN ANALYSIS

Hyperbolic equations, function spaces with exponential weights and Nemytskij operators

Winfried Sickel, Univ. Jena

Thu Mar 4 2004, 15:15

Abstract

Organized by C. Berg, G. Grubb

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Ph.D.-thesis defence

Finding Bases for Riemann-Roch Spaces in Generalized Suzuki- and Ree Function Fields

Henrik Gadegaard Spalk

Tue Mar 9 2004, 12:15 - 14:00

Abstract

Bedømmelsesudvalg: ¡br/¿ Docent Tom Høholdt, Danmarks Tekniske Universitet ¡br/¿ Professor Loren Olson, Universitetet i Tromsø ¡br/¿ Professor Henning Haahr Andersen (formand), Aarhus Universitet

Organized by Annette Møller

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

TALK

Maclaurin and Newton: The Newtonian Style and the Authority of Mathematics

Judith V. Grabiner, Professor of Mathematics, Pitzer College, California

Tue Mar 9 2004, 20:00

Abstract

Judith V. Grabiner Professor of Mathematics, Pitzer College, California:

Maclaurin and Newton: The Newtonian Style and the Authority of Mathematics

Tirsdag, den 9. marts 2004, kl. ca. 20 i auditorium 10 på H. C. Ørsted Instituttet, Universitetsparken 5, København

Bemærk, at Selskabet før foredraget holder generalforsamling med start kl. 19.45. Den forventes at vare til kl. ca. 20.

ABSTRACT

Colin Maclaurin (1698-1746) was Newton's most prominent Scottish follower. From his refutation of Berkeley's attack on Newton's calculus to the gravitational theory of the shape of the earth, Maclaurin based his mathematical work on Newton's. He also owed some of his early success in publication and in job-hunting to Newton's patronage. But more important, Maclaurin worked using what I. B. Cohen has called "the Newtonian style". This style, which involves a particular relationship between sophisticated mathematical modeling and empirical data, was responsible not only for Maclaurin's scientific successes but for his ability to solve problems on other subjects, ranging from taxation to insurance (not to mention theology). His diverse successes strengthened his authority as a natural philosopher, the prestige of Newtonianism, and the authority of mathematics in the Enlightenment. And the success of this style suggests an alternative to the purely analytic approach to physics of eighteenth-century Continental mathematicians.

Organized by Videnskabshistorisk Selskab

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

OPERATOR ALGEBRA SEMINAR

On the unboundedness of a function of Hardy and Littlewood.

Professor Christian Berg, Københavns Universitet

Wed Mar 10 2004, 14:15

Abstract

Organized by Mikael Rørdam

(sduimada / sduimada)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Integration of simplicial forms and Deligne cohomology

Rune Ljungmann University of Aarhus

Wed Mar 10 2004, 16:15 - 16:15

Abstract

For construction of invariants for families of bundles, integration along the fiber is usually applied in order to obtain forms defined on the parameter space. In the case of families of bundles with connection the classical Chern-Weil theory gives rise to invariants living in smooth Deligne cohomology, and hence a notion of integration along the fiber is needed in this setting. We present two constructions of such a map: One defined in the simplicial model for Deligne cohomology introduced by Dupont and Kamber and another defined in a more combinatorial model associated to a triangulation of the bundle.

Organized by Jørgen Ellegaard Andersen

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG
AALBORG UNIVERSITET

Seminar

Processor sharing models for wireless data communication

Martin Bøgsted Hansen, Dept. of Mathematical Sciences, Aalborg University

Thu Mar 11 2004, 13:00

Abstract

During the next decade, it is expected that data transfer will dominate voice communication in wireless communication systems. This will require new efficient methods for capacity planning of such systems.

The Erlang B formula has since its publication been the predominant tool for capacity dimensioning of communication systems. However, due to the packet switched nature of data traffic new tools are called for.

It will be shown how processor sharing models from computer science, can be modified to yield performance characteristics for wireless data communication systems.

Organized by

Lisbeth Grubbe Nielsen 2004-02-19 10:08:00

(dmfeditor / dmfeditor)

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MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Blodstrømning og finger-blodtryk for personer der rejser sig op

Mette Olufsen (Dept. Mathematics, North Carolina State University)

Thu Mar 11 2004, 13:00 - 15:00

Abstract

Personer med hypertension har forhøjet blodtryk og nedsat flow gennem cerebralarterierne, der er blandt de vigtigste arterier som transporter ilt til hjernen. I seminaret vil jeg redegøre for de resultater vi har opnået ved at analysere data for måling af blodstrømning i højre cerebralarterie og blodtryk i venstre langfinger. Vi har modelleret det kardiovasculære system i analogi med et elektrisk kredsløb med modstande, kapacitanser og dioder. Dette kredsløb kan matematisk defineres som et system af lineære ordinære differentialligninger. Da vores model indeholder tilstrækkelig mange detaljer, kan vi bestemme hvilke parametre der giver anledning til de observerede effekter.

Organized by

(rucimfufa / rucimfufa)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Statistics Seminar

Stochastic inequalities and perfect independence

Jørgen Hoffmann-Jørgensen Aarhus Universitet

Thu Mar 11 2004, 14:15 - 14:15

Abstract

In the context of empirical processes and uniform convergence of stochastic processes it is important to extend the classical inequalities for sums of independent random variables (eg. Lévy's inequality, Ottavani's inequality, Jensen' inequality, the symmetrization inequalities, the exponential inequality and the subgaussian inequality) to random vectors (usually non-measurable!) with values in an infinite dimensional normed linear space. Since the random vectors under consideration are non-measurable in most cases of interest, we are faced with the problem of defining "independence", because the usual definition does not apply and the evident extension doesn't seem to be appropriate for proving the desired inequalities. In the literature this problem has been bypassed by assuming that the random vectors are projections on a product probability space. However, this imposes an unpleasant restriction on the probability space and it doesn't apply to transformed processes. In the seminar, I shall present two new concepts of "independence" of non-measurable random vectors which apply to arbitrary probability spaces and which delivers the desired inequalities. In particular, I shall show a form of Ottaviani's inequality with a new constant, which improves the classical constant (even in the measurable real valued case) and which is small enough to deliver Lévy's inequality far beyond the usual assumptions.

Organized by Søren Asmussen

(auimf / auimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

SEMINAR IN ANALYSIS

On Non-local Boundary Value Problems for Operators of Laplace Type

Christian Frey, Universität Köln

Thu Mar 11 2004, 15:15

Abstract

Given a differential operator L of Laplace type on a compact Riemannian manifold with smooth boundary we establish necessary and sufficient conditions for a pseudodifferential projection Q to define a regular boundary value problem. Furthermore, we characterize those boundary conditions for which the realisation of L and Q, i.e. the operator L acting on the natural Sobolev space with the boundary condition, is selfadjoint. The conditions are given in terms of the pair (Q, Q_+) where Q_+ is an analogon of the Atiyah-Patodi-Singer boundary projection for Laplace-type operators. Whereas the symmetry of the realisation turns out to be equivalent to the isotropy of the range of Q in a certain weakly symplectic Hilbert-space, regularity and self-adjointness lead to Fredholm and left-Fredholm-conditions for the pair (Q, Q_+).

Organized by C. Berg, G. Grubb

(kuimf / kuimf)

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MAT-NYT

<div align="center">

Seminar

Astronomical Riddles and Secret Methods of Mesopotamia.

Lis Brack Bernsen

Thu Mar 11 2004, 15:15

</div>

Abstract

Siden Neugebauers "Astronomical Cuneiform Texts" (1955) ved vi så nogenlunde, hvordan Babylonerne, i de sidste 3 århundreder f. Kr. beregnede månefaser, måneformørkelser og planeternes bevægelser. Sammendrag af deres regelmæssige astronomiske observationer er også blevet publiceret [Sachs & Hunger (1989-1996): "Astronomical Diaries and Related Texts from Babylonia. Volume I-III: Diaries from 652 B.C. to 61 B.C."]. Alligevel ved vi stadig meget lidt om hvordan disse effektive of meget elegante numeriske ACT-metoder opstod - eller hvordan Babylonerne var i stand til så nøjagtigt at bestemme astronomiske parametre ud fra deres observationer. Forskningen indenfor Babylonsk astronomi koncentrerer sig derfor i øjeblikket om kileskrifttavler fra den såkaldte mellemperiode. Disse tavler kender endnu ikke ACT-metoderne, men indeholder meget kortfattede anvisninger på, hvordan astronomiske fænomener kan forudsiges. Håbet er, at den empiriske viden, der er skjult i disse tekster, kan bidrage væsentligt til forståelsen af hvordan ACT-astronomien opstod. Tavlen TU 11 (fra Uruk) blev tegnet af i kileskrift og publiceret i 1922. Den indeholder mange forskellige metoder til forudsigelse af månefaser; men den er meget svær at decifrere og oversætte. Foredraget vil vise hvordan det ved hjælp af computersimulerede måne-observationer har været muligt at forstå teksten og rekonstruere de fleste af de nedskrevne metoder.

Organized by History of Science Department

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

On Some Concepts of Infinite Divisibility and Their Roles in Turbulence, Finance and Quantum Stochastics

Ole E. Barndorff-Nielsen, Aarhus Universitet

Fri Mar 12 2004, 16:30

Abstract

Up til about 25 years ago infinite divisibility, and the closely associated concept of Levy processes, was by many and for many years thought to be a rather esoteric mathematical discpline, with little applied interest. With the gradual realisation that many of the more or less well known probability distributions are in fact infinitely divisible and with the increased understanding of the nature of Lévy processes, made possible by the greatly increased computing power, the picture has changed dramatically. While infinite divisibility and Lévy processes are not the main topic of the talk, they serve as a convenient excuse for me to speak about some of the things that have interested most in the last about five years, and which are all concerned with stochastic modelling, in turbulence, finance and quantum physics.

Organized by Anders Rahbek

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

MATHEMATICS COLLOQUIUM

It's all for the best: Looking for perfection with mathematical models

Judith V. Grabiner, Flora Sanborn Pitzer Professor of Mathematics, Pitzer College, On sabbatical Jan

Tue Mar 16 2004, 15:15

Abstract

Many problems, from optics to economics, can be solved mathematically by finding the highest, the quickest, the shortest–the best of something. This has been true from antiquity to the present. The present lecture will ask, why did we start looking for such explanations, and how did we conclude that we could productively do so? Scientific examples will include problems from Greek optics and optimization, and more modern questions from optics and classical mechanics which draw on ideas from Newton's and Leibniz's calculus and from the calculus of variations. A surprising role will also be played by philosophical ideas, especially those of Leibniz, Maupertuis, and Adam Smith.

Organized by

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Seminar

Variational calculation of excited states in carbon nanotubes

Thomas Garm Pedersen, Dept. of Physics, Aalborg University

Wed Mar 17 2004, 13:00

Abstract

Carbon nanotubes are cylindrical molecules composed entirely of carbon atoms. Their diameter is roughly one nanometer and the length can exceed one micrometer. The atoms form a chiral structure and for certain chiralities the nanotube becomes a semiconductor. Hence, these materials are truly one-dimensional semiconductors with a range of potential applications is physics and devices. For optical applications, the excited electronic states are of special importance. In particular, bound excitons (electron-hole pairs) play a dominat role in e.g. light emission. In this talk, a simple variational model for such excitons is presented. Based on results for single excitons, we then proceed to higher excitations such as biexcitons (two electron-hole pairs). The predictions of the variational model are compared to recent measurements.

Organized by Horia Cornean

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG
AALBORG UNIVERSITET

Seminar

Rigorous results on the dynamics of bloch electrons in (weak) electric and/or magnetic fields

Gheorghe Nenciu, University of Bucharest

Wed Mar 17 2004, 14:15

Abstract

We review some of the rigorous results known about the dynamics of Bloch electrons subjected to external electric and/or magnetic fields. Among the discussed topics are: the existence of exponentially localized Wannier functions, Peierls-Onsager substitution rule, and the Stark-Wannier ladder resonances.

Organized by Horia Cornean

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Algebra Seminar

Global F-regularity of Schubert varieties

Jesper Funch Thomsen Aarhus Universitet

Wed Mar 17 2004, 14:15 - 14:15

Abstract

We recall the notion of global F-regularity of projective varieties in positive characteristic and prove that Schubert varieties are globally F-regular. Global F-regularity was introduced by Karen Smith and can be viewed as a generalization of Frobenius splitting. Applications to D-modules on flag manifolds are sketched. This is joint work with N. Lauritzen and U. Raben-Pedersen.

Organized by Niels Lauritzen

Niels Lauritzen 2004-03-10 18:10:32

(auimf / auimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

Recent developments in rare simultation with heavy tails

Søren Asmussen, Aarhus Universitet

Wed Mar 17 2004, 15:15

Abstract

Organized by Anders Rahbek

(kuimf / kuimf)

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MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

seminar

Wave speed of propagating excitation waves in pancreatic islets of Langerhans.

Morten Gram Pedersen

Thu Mar 18 2004, 15:15 - 16:00

Abstract

The pancreatic islets of Langerhans consist of thousands of coupled beta-cells. In experiments excitation waves propagating through an glucose stimulated islet have been seen. Standard beta-cell models can explain these waves, but they result in too high wave speeds. It has been suggested that a lower glucose concentration will result in lower wave speeds, but I will in this talk explain why I think this result is incorrect. I will instead propose that the natural heterogeneity leads to lower wave speeds, sometimes even in the observed range. This is explained using homogenization theory. If there is time, I will discuss how a voltage dependent coupling influences these results. ========

Organized by Mads Peter Sørensen

(dtumat / dtumat)

MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

seminar

Energy funneling and bubble generation in DNA models

Peter Vingaard Larsen

Thu Mar 18 2004, 16:15 - 17:00

Abstract

The opening mechanism of the DNA molecule - crucial for cell functioning - is not understood in detail. It is known that no chemical energy is used, yet energy is needed to break hydrogen bonds between the DNA strands. We have investigated Peyrard-Bishop models for DNA dynamics, augmented with curvature as well as twisting of the base pairs. We find that the inhomogeneities introduced hereby are able to localize the random energy of thermal fluctuations. This introduces a way to provide energy for the opening process.

Organized by Mads Peter Sørensen

(dtumat / dtumat)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Seminar

Traffic Engineering of Cellular Wireless Communication Systems

Villy Bæk Iversen, COM, Technical University of Denmark

Fri Mar 19 2004, 13:00

Abstract

In mobile communication systems an efficient utilisation of the bandwidth is of great importance. In this talk we describe the basic principles for obtaining the maximum utilisation and study strategies or obtaining these limits. In general a high degree of sharing is efficient, but requires service protection mechanisms to guarantee the Grade of Service for all users.

By generalisations of the classical teletraffic theory we obtain models of multi-rate (multi-media) traffic with rather general arrival processes which are insensitive to service time distributions.

We study cellular systems with hierarchical cell structures, the advantage of exploiting overlapping cell areas, hard and soft blockings, and we show that by call packing we obtain a very high utilisation.

The models are applied for multi-service third generation cellular systems.

Organized by Martin Bøgsted Hansen

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG
AALBORG UNIVERSITET

Seminar

Performance modelling of future communication systems

Hans-Peter Schwefel, Dept. of Communication Technology, Aalborg University

Wed Mar 24 2004, 13:00

Abstract

Performance models for IP networks have turned out to be a huge challenge for a number of reasons: (1) packet based transmission is more difficult to model than the circuit switched case; (2) traffic tends to be very bursty;(3) the impact of routing and scheduling has to be taken into account; (4) the transport layer (i.e. Transmission Control Protocol, TCP, for a large part of today's traffic) has major performance impact, and (5) there exists a wide range of applications generating heterogeneous traffic with varying performance (or Quality of Service) requirements. As mobile access to IP networks is becoming increasingly popular, the problem of finding adequate performance models becomes even more complex. This talk focuses on three of the challenges, namely (1),(2), and (4): Previous results from Markovian models using a Matrix-Exponential representation of so-called truncated Power-Tail distributions provide important insights into the performance impact of extreme burstiness (long-range dependence). However, the models and methods have to be modified to account for the dynamic packet rate adjustment as provided by TCP congestion control. One consequence is that the 'linear' approach of defining a traffic model which is subsequently fed into a network model cannot be employed any more. Three different model types are discussed in this context: Connection Level models, fix-point models, and integrated models. As part of the latter class, an extension of the Markovian models from earlier in the talk is discussed, and the matrix-algebraic solutions are used to obtain numerical performance results. The talk concludes with an outlook on the challenges in wireless scenarios.

Organized by Martin Bøgsted Hansen

(dmfeditor / dmfeditor)

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MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Continuous analogues of Pimsner Algebras

Ilan Hirshberg

Wed Mar 24 2004, 14:15

Abstract

Organized by Mikael Rørdam

(sduimada / sduimada)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Spirals in Hilbert space. With an application in information theory

Bent Fuglede, University of Copenhagen

Wed Mar 24 2004, 15:15

Abstract

A (logarithmic) spiral of order α (a real number) is defined as a continuous path $t \mapsto x(t)$ in a real Hilbert space such that $\|x(t_1+t)-x(t_2+t)\| = e^{\alpha t}\|x(t_1) - x(t_2)\|$ for all real numbers t, t_1, and t_2.

For $\alpha = 0$ the spiral becomes a helix. The elegant proof by P. Masani of the spectral characterization of helixes, due to Kolmogorov and to von Neumann and Schoenberg, is adapted here to spirals.

As an application a conjecture by F. Topsøe that certain kernels on the positive real line considered in information theory are negative definite, and hence are squares of metrics on the positive real line, is confirmed.

Organized by Niels Jakob Laustsen

(kuimf / kuimf)

30

MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Kultur, organisation og kommunikationsteknologi i et nyt gymnasium

Crilles Bacher (Kunskapsskolan, Mobila Malmø)

Thu Mar 25 2004, 13:00 - 15:00

Abstract

På seminaret vil jeg med udgangspunkt i bl.a. Niklas Luhmans systemteori redegøre for sammenhængen mellem kommunikation og læring og præsentere mine erfaringer med en konkret implementering af anvendelsen af computermedieret undervisning på gymnasieniveau i Sverige. Sammenhængen mellem institutioners organisation og læringspraksis vil være i fokus.

Organized by

RUCIMFUFA Editor 2004-02-03 15:58:35

(rucimfufa / rucimfufa)

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MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Mathematics Colloquium

KT and HKT Geometry

Anna Fino

Fri Mar 26 2004, 12:30

Abstract

On any Hermitian manifold there exists a unique Hermitian connection whose torsion tensor is totally skew-symmetric, known in the literature as Bismut connection or KT connection. In this talk we will present some results about manifolds for which the Bismut connection has holonomy contained in SU(n) and Sp(n).

Organized by Andrew Swann

(sduimada / sduimada)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Seminar

Dynamiske systemer i natur og teknik

Morten Brøns, Institut for Matematik, DTU

Fri Mar 26 2004, 13:00

Abstract

Et dynamisk system er en matematisk model for noget der udvikler sig med tiden. De grundlæggende naturlove beskriver hver deres del af verden som et dynamisk system, og derfor er den tilhørende matematiske teori en hovedhjørnesten i moderne videnskab. Matematikken kan levere kvantitative metoder til i detaljer at beregne hvordan dynamiske systemer udvikler sig. Men ofte er det tilstrækkeligt at opnå kvalitativ viden om systemets opførsel, og hertil findes en række moderne matematiske teknikker.

Foredraget vil med eksempler fra naturvidenskab og teknisk videnskab illustrere hvilken indsigt man kan opnå med kvalitative metoder, samt præsentere nogle grundlæggende begræsninger i vore muligheder for at forstå dynamiske systemer i alle detaljer. Foredraget vil inddrage eksempler fra strømningsmekanik og økologi, og kræver ingen særlige forudsætninger.

Organized by Martin Raussen

Lisbeth Grubbe Nielsen 2004-02-27 11:20:52

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Seminar

Universality and Randomness in Combinatorics and Geometry

Anatoly Vershik Skt. Petersburg, Russia

Mon Mar 29 2004, 16:00 - 16:00

Abstract

The notion of universal graphs, universal metric spaces and other objects will consider from the point of view theory of random matrices. It gives new very intersitng properties of the universal objects.

Organized by Alexei Venkov

Annemette Hammer 2004-03-28 14:55:13

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Continuous analogues of Pimsner algebras

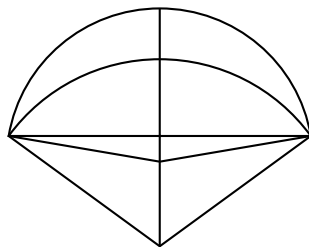**Ilan Hirshberg, University of Southern Denmark**

Wed Mar 31 2004, 15:15

Abstract

Pimsner introduced a way of constructing C*-algebras from certain Hilbert modules. Pimsner's construction generalizes many known and important examples in C*-algebra theory, such as Cuntz algebras and crossed product by the integers. We'll discus a 'continuous' analogue of Pimsner's construction (more precisely, of the Toeplitz extension), which generalizes crossed product by the reals, and Arveson's spectral algebras, and talk about the K-theory of those algebras (a result which is analogous to the K-theory computation of Pimsner). I will try to make the talk reasonably accessible to graduate students and non-specialists (in particular, I will not assume that the audience is necessarily familiar with most of the concepts mentioned in this abstract).

Organized by NJL

(kuimf / kuimf)

DANSK MATEMATISK FORENING
MAT-NYT CALENDAR

This document is a hard copy of all entries in the electronic Mat-Nyt calendar of the Danish Mathematical Society covering the period

2004-4-1 – 2004-5-1.

Produced Thu Jan 5, 2006

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Seminar

Stability Number and [a,b]-Factors in Graphs

Mekkia Kouider, Université Paris-Sud

Thu Apr 1 2004, 13:00

Abstract

A spanning subgraph whose vertices have degrees belonging to the interval $[a, b]$, where a and b are positive integers, such that $a \leq b$, is called an $[a, b]$-factor. We consider sufficient conditions for existence of an $[a, b]$-factor or a connected $[a, b]$-factor. The conditions involve the minimum degree, the stability number, and the connectivity of a graph.

The talk is aimed at discrete mathematicians and students from the higher semesters (mat4 and mat6).

Organized by Preben Dahl Vestergaard

Lisbeth Grubbe Nielsen 2004-03-31 11:16:31

(dmfeditor / dmfeditor)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Statistics Seminar

Application of log-Gaussian Cox processes in disease mapping

Professor Viktor Benes Charles University, Praha, Czech Republic

Thu Apr 1 2004, 14:15 - 14:15

Abstract

The topic of the talk is an analysis of a real data set of reported cases of a tick-borne disease in Central Bohemia together with explanatory variables from GIS. The model of log-Gaussian Cox process is used with a parametric intensity function. A hierarchical Bayesian approach is adapted and the posterior distribution of the parameters is simulated by means of Markov chain Monte Carlo. A risk of disease map is constructed, the variability quantified, model validity and sensitivity discussed. Interpretations in epidemiology follow.

Organized by Eva Bjørn Vedel Jensen

(auimf / auimf)

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MAT-NYT

Danish Center for Applied Mathematics and Mechanics

Seminar

Singularities of Stability Boundaries with Mechanical Applications

Professor Alexander P. Seyranian

Fri Apr 2 2004, 15:30

Abstract

Analysis of stability domain and its boundary is a problem of great practical importance. A number of examples reveal complexity of the stability domain which generally consists of smooth parts and can have singularities of different kind. They reflect specific physical properties of the system and lead to numerical difficulties of the analysis. It turns out that singularities of the stability boundary are related to bifurcations of multiple purely imaginary eigenvalues of the system operator.

The lecture is devoted to stability analysis of a general linear system of ordinary differential equations whose coefficients are smooth functions of parameters. The linear system can be treated as linearization of equations of motion near a stationary solution or steady motion. The concept of a general position is introduced allowing one to select typical (generic) structures and concentrate attention on most practical and observable situations. A qualitative and quantitative description of the stability domain is given and general formulae for local approximation of the stability domain are derived using only information at the initial regular or singular boundary point. As mechanical examples a stability problem of a double pendulum loaded by a follower force, gyroscopic stabilization of a rotating system, and a buckling problem of an elastically supported column are considered.

Reference: Seyranian A.P. & Mailybaev A.A. (2003). Multiparameter Stability Theory with Mechanical Applications. World Scientific.

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Algebra Seminar

Normality of nilpotent orbits in type E_6 in positive characteristic

Anne Lund Christophersen

Wed Apr 14 2004, 14:15 - 15:15

Abstract

In this talk we discuss how to extend E. Sommers classification of the normal nilpotent orbits in type E_6 to positive characteristic.

Organized by Jesper Funch Thomsen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Operator Algebra Seminar

Continuous analogues of Pimsner Algebras, II

Ilan Hirshberg

Wed Apr 14 2004, 14:15

Abstract

Organized by Mikael Rørdam

(sduimada / sduimada)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Semi-simplicity of the bidual of the algebra of operators on a Banach space

Matt Daws, University of Leeds, UK

Wed Apr 14 2004, 15:15

Abstract

For a Banach space E let $B(E)$ be the algerba of operators on E. There are two products on $B(E)''$, the bidual of $B(E)$, the first and second Arens products. If E is super-reflexive (in particular, if E is an L^p space for $1 < p < \infty$) then these two products coincide, as is well known in the Hilbert space case. Furthermore, if H is a Hilbert space, then $B(H)''$ is semi-simple. However, this talk will outline a proof that $B(L^p)''$ is not semi-simple if L^p is not isomorphic to a Hilbert space.

Organized by NJL

(kuimf / kuimf)

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Workshop on

Aspects of Large Quantum Systems Related to Bose-Einstein Condensation

Thu Apr 15 2004, 09:00 - Sat Apr 17 2004

Abstract

The purpose of the workshop is to present results on, and to discuss, aspects of large quantum systems related to Bose-Einstein condensation. The aim is to consider three themes: Existence of BEC, Dimensionality, Dynamics and cooling from three points of view: Mathematical, Theoretical, Experimental.

The workshop will gather participants covering all three points of view, with the hope of furthering interaction between the participants, and a fruitful exchange of ideas and possible directions of future research.

Organized by

MPS Editor 2004-01-05 13:35:13

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

SEMINAR IN ANALYSIS

Problems of Moments in Analysis, Probability and Statistics

Jordan Stoyanov, University of Newcastle, UK

Thu Apr 15 2004, 15:15

Abstract

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG
AALBORG UNIVERSITET

Seminar

Combinatorial topology and topological combinatorics in examples

Martin Raussen, Dept. of Mathematical Sciences, Aalborg University

Fri Apr 16 2004, 14:00

Abstract

Topology is the branch of mathematics that handles geometric issues of an abstract and non-rigid nature. For more than a century, methods and tools from combinatorics have been applied in topology: Geometric spaces are modelled as simplicial complexes built from vertices, edges, triangles, tetrahedra etc. ("higher-dimensional graphs"). Using these combinatorial complexes it is possible to calculate invariants of the spaces (e.g., Euler characteristics, homology etc.)

More recently, combinatorial questions have been solved using simple, but non-trivial topological results from the 1930s like the Borsuk-Ulam theorem on symmetry-preserving continuous maps between spheres or the equivalent Lusternik-Schnirelman-Borsuk theorem on coverings of spheres, both of which I want to explain.

The combinatorial problem that I wish to treat in some detail is the Kneser conjecture posed by Martin Kneser, the grand old man in quadratic forms, in 1955. It deals with the minimum number of classes of pairwise intersecting k-element subsets of an n-element set. Graph theorists will prefer to consider this as a statement about the chromatic number (minimum numbers of colours in a colouring) of the associated Kneser graph.

In 1978, László Lovàsz gave a proof of the Kneser conjecture applying the Borsuk-Ulam theorem - and some more sophisticated topology - to the (simplicial) neighbourhood complex of the Kneser graph. His method of proof has later on led to the solution of many other combinatorial problems.

In 2002, the mathematics student Joshua Greene gave a 2-page proof of the Kneser conjecture based on (his own) variant of the Lusternik-Schnirelman-Borsuk theorem; a proof that is considered to belong to "the Book" and that earned him the Morgan prize of the AMS. I shall try to explain this proof.

This is a survey and con amore talk which is not based on the lecturer's research. It requires no special knowledge and is aimed at being digestable for both staff and students.

Organized by

(dmfeditor / dmfeditor)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

seminar

Small time behaviour of Levy processes

Ron Doney, University of Manchester

Tue Apr 20 2004, 14:00

Abstract

This talk describes a complete solution to the following two related questions. Which Levy processes have the property that their probability of being positive at time t tends to 1 as t tends to 0? Which Levy processes have the property that the probability that they leave a symmetric interval [-r,r] on the positive side tends to 1 as r tends to 0?

Organized by

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Videnskabshistorisk Selskab

T. N. Thiele: Statistiker i verdensklasse

Steffen Lauritzen, Aalborg Universitet

Tue Apr 20 2004, 19:45

Abstract

Thorvald N. Thiele (1838-1910) var professor i astronomi ved Københavns Universitet og medstifter af Hafnia, det første danske private livsforsikringsselskab. Thiele virkede som aktuar, astronom, matematiker og statistiker. Hans væsentligste videnskabelige bidrag var sandsynligvis indenfor det sidste område. Foredraget vil give et indblik i de vigtigste af Thiele's bidrag til statistikkens teori og metode, men jeg vil også komme ind på andre aspekter af Thiele's videnskabelige og professionelle liv.

Organized by

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Operator Algebra Seminar

Invariant subspaces of the quasinilpotent DT-operator

Uffe Haagerup

Wed Apr 21 2004, 14:15

Abstract

Organized by Mikael Rørdam

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND
PROBABILITY

Stochastic bounds for Lévy processes

Ron Doney , Manchester

Wed Apr 21 2004, 15:15

Abstract

It is shown that it is possible to bound the path of an arbitrary Lévy process above and below by the paths of two random walks. These walks have the same step distribution, but different random starting points. This allows one to deduce Lévy process versions of many known results about the large-time behaviour of random walks. This is illustrated by establishing a comprehensive theorem about Lévy processes which converge to infinity in probability.

Organized by Anders Rahbek

(kuimf / kuimf)

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Integral bases for TQFT modules

Patrick Gilmer Louisiana State University Baton Rouge

Wed Apr 21 2004, 16:15 - 16:15

Abstract

We will describe joint work with Gregor Masbaum where we find explicit bases for abstractly defined lattices (over $Z[zeta_p]$) in the vector space over $Q[zeta_p]$ associated to surfaces by the $SO(3)$ TQFT at an odd prime p. We take a skein theory approach.

Organized by Jørgen Ellegaard Andersen

MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

På grænsen mellem fag og politik

Anja Skjoldborg Hansen (Institut for Miljøvurdering)

Thu Apr 22 2004, 13:00 - 15:00

Abstract

Inspireret af mine egne oplevelser i Institut for Miljøvurdering vil jeg gerne tage hul på en diskussion om grænserne mellem faglighed og holdninger. Problematikken er bl.a. relevant for udvikling og anvendelsen af modeller hvor der ligger mere eller mindre bevidste valg til grund. Men også valg af forskningsområde, præsentation af resultater og meget andet er i virkeligheden bestemt af mere end rent faglige præmisser.

Organized by

RUCIMFUFA Editor 2004-02-03 16:01:05

(rucimfufa / rucimfufa)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

Øresundsseminar

Øresund Seminar in Analysis and PDE

Greiner, Grubb, Lenell, Saito

Thu Apr 22 2004, 13:15

Abstract

Aud. 4:

13.15-14.00 Peter Greiner: "Subelliptic PDE's and subRiemannian geometry"

14.15-15.00 Yoshimo Saito: "Approximation numbers of the Sobolev embedding operators and the Hardy operators"

Aud. 8:

15.45-16.30 Jonatan Lenell: "Traveling Wave Solutions of a Shallow Water Equation"

16.45-17.30 Gerd Grubb: "Is there a canonical trace on pseudodifferential boundary operators?"

Organized by Organised by G. Grubb, A. Melin, P.-A. Ivert

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG
AARHUS UNIVERSITET

Statistics Seminar

Recent developments in rare event simulation with heavy tails

Søren Asmussen AU

Thu Apr 22 2004, 14:15 - 14:15

Abstract

The interest in heavy tails has had a boom in the last decade in application areas such as insurance risk, finance and networks engineering. The emphasis is often on studying the influence of the tail on a small probability, say the probability of a large financial loss or of incorrect transmission of a package in a communications network. Simulation is often the only possibility, but how to perform it efficiently is far less understood than in the light tailed case where the typical approach is importance sampling using i.i.d. exponential change of measure. A few efficient algorithms have been developed in the (overly simple) setting of $P(S_n > u)$, with $S_n = Y_1 + \cdots + Y_n$ a random walk and n deterministic or an independent r.v. One of these uses conditional Monte Carlo and order statistics, others i.i.d. importance sampling. In this talk, I will show first how some of the importance sampling algorithms may be understood in terms of a minimum entropy (maximum likelihood) argument, and next how the identity $P(S_n > u) = nP(S_n > u, M_n = Y_n)$, where $M_n = \max(Y_1, \ldots, Y_n)$, may be exploited to develop new and extremely efficient algorithms. Much of the intuition behind the whole talk is based upon S_n and M_n being close in the heavy-tailed case.

Organized by Søren Asmussen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Ph.D. DEFENSE

Operator algebraic applications in symbolic dynamics

Toke Meier Carlsen

Fri Apr 23 2004, 15:15

Abstract

Organized by

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Algebra Seminar

The symmetry of category O

Dr Catharina Stroppel University of Aarhus

Wed Apr 28 2004, 14:15 - 15:15

Abstract

We consider different endofunctors T and C (defined by Arkhipov/Joseph and Irving) of the principal block of O. Since they are defined in a 'symmetric' way, we try to construct an involutive auto-equivalence of the category sending T to C. A clear indication for the existence of such an auto-equivalence is also the fact that the Kazhdan-Lusztig polynomial corresponding to x and y equals the polynomial corresponding to the inverse of x and the inverse of y. The aim of the talk, however, is to show that the structure of O is not completely described by Kazhdan-Lusztig polynomials.

Organized by Henning Haahr Andersen

Henning Haahr Andersen 2004-04-21 11:43:07

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

OPERATOR ALGEBRA SEMINAR

The range of certain augmented invariants

Søren Eilers, University of Copenhagen

Wed Apr 28 2004, 14:15

Abstract

In various branches of classification theory one needs to consider K-theory with coefficients in order to obtain complete invariants. This has been understood for several years, but until now, not much has been known about the range of such invariants. I will present recent results obtained jointly with Andrew Toms which shed light on the "classical" case of so-called AD algebras, and even more recent results on purely infinite C*-algebras which are equally obscure.

Organized by Mikael Rørdam

(sduimada / sduimada)

MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

colloquium

Comparison results for quasilinear elliptic equations via Picone-type identity

Tadie Tadie

Wed Apr 28 2004, 15:15 - 16:00

Abstract

When it comes to compare different solutions of similar differential equations, Picone types identities can help a lot, should it be about ODE or PDE. This work is focussed on a multidimensional type identity. We will provide a Picone type identity for solutions of these equations and point out some interesting comparison and uniqueness results it leads to.

Organized by Vagn Lundsgaard Hansen

(dtumat / dtumat)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Compact Gelfand transform and strong Wiener lemmas

Anders Dahlner, Lund University

Wed Apr 28 2004, 15:15

Abstract

Let us recall a beautiful result of Norbert Wiener. If the Fourier series of a continuous function f is absolutely convergent and if $f(t)$ is non-zero for all t, then the Fourier series of $1/f$ is also absolutely convergent as well.

In the language of a commutative Banach algebra A with a unit we have the generalization of the Wiener Lemma: An element x in A is invertible if and only if the Gelfand transform, $\hat{x}$, of x is non-zero on the maximal ideal space of A.

We shall consider quantitative versions of this result in the following sense. Let A be a commutative Banach algebra with unit e and maximal ideal space $M(A)$.

Given $0 < \delta \leq 1$, define $C_\delta(A) = \sup\{\|x^{-1}\| : \|x\| \leq 1, \min_{m \in M(A)} |\hat{x}(m)| \geq \delta\}$.

Problem 1. Calculate $\delta_1(A) = \inf\{\delta \in (0,1] : C_\delta(A) < \infty\}$.

Problem 2. Given $\epsilon > 0$, is $K_\epsilon(A) = \sup\{\|(e-x)^{-1}\| : \|x\| \leq 1, \max_{m \in M(A)} |\hat{x}(m)| \leq \epsilon\} < \infty$?

The second problem is completely understood in terms of a uniform spectral radius of the algebra.

In the talk we present the annoying open problem: $1/2 \leq \delta_1(\ell^1(Z)) \leq 1/\sqrt{2}$. As well as some positive results when the Gelfand transform is a compact operator.

Organized by NJL

(kuimf / kuimf)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Solitons and waves in noncommutative spaces

Thordur Jonsson University of Iceland

Wed Apr 28 2004, 16:15 - 17:15

Abstract

Recent results about the existence and nonexistence of solitons in noncommutative spaces are reviewed. We also discuss the existence theory for nonlinear noncommutative waves and show that the propagation velocity is infinite

Organized by Jørgen Ellegaard Andersen

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Presentations, word and conjugacy problems for generalized braids

V. Vershini p.t. Université de Montpellier, France

Wed Apr 28 2004, 17:30 - 18:30

Abstract

Organized by Jørgen Ellegaard Andersen

MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Modeldag

Værdien af og begrænsninger ved brugen af matematiske modeller i kemien

Thu Apr 29 2004, 09:00 - 16:00

Abstract

Organized by

(rucimfufa / rucimfufa)

MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

seminar

Hamiltonian helicity

Mikhail V. Deryabin

Thu Apr 29 2004, 15:15 - 16:00

Abstract

Helicity, or asymptotic Hopf invariant of a divergence-free vector field on a manifold M is an invariant of a coadjoint orbit of Lie group SDiff(M). For a simply-connected manifold it measures asymptotic linking of a vector field with a foliation. We consider a symplectic counterpart of helicity, called hamiltonian helicity, defined for Hamiltonian vector fields on extended phase spaces (suggested by Poul Hjorth about 15 years ago).

We construct an integral invariant that both is a symplectomorphism invariant, like traditional helicity, and an integral invariant for a given Hamiltonian vector field, generalizing the famous Poincare integral invariant. We relate hamiltonian helicity with the Calabi invariant and discuss its topological properties.

Organized by Poul G. Hjorth

(dtumat / dtumat)

28

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Seminar

Building and Fitting a Model of Human Vocabulary Change

Geoff Nicholls, Mathematics Department, Auckland University, New Zealand
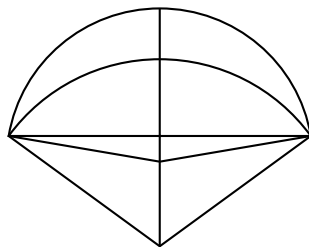
Fri Apr 30 2004, 13:00

Abstract

We report results of a study of European vocabulary data. Similarities between the vocabularies of the Indo-European languages reflect their origin in a common ancestral language. Pairs of languages which are relatively closer in vocabulary diverged from one another in relatively more recent times. We build and fit a model of the language and vocabulary change. The basic model ingredients are a branching process of sets, and a stochastic birth-death process for the set elements. The fitting is carried out via sample-based Bayesian inference. Some of the mathematical tools we use were developed by others to treat problems in population genetics. Coauthors: This is joint work with Russell Gray, University of Auckland

This talk is aimed at people with an interest in applied probability and statistics, including advanced undergraduate students, and applied mathematicians with an interest in stochastic modelling.

Organized by Jesper Møller

(dmfeditor / dmfeditor)

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DANSK MATEMATISK FORENING
MAT-NYT CALENDAR

This document is a hard copy of all entries in the electronic Mat-Nyt calendar of the Danish Mathematical Society covering the period

2004-5-1 – 2004-6-1.

Produced Thu Jan 5, 2006

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

An Unbiased Measure of Realized Variance

Peter R. Hansen, Brown University

Wed May 5 2004, 15:15

Abstract

The realized variance (RV) is known to be biased because intraday returns are contaminated with market microstructure noise, in particular if intraday returns are sampled at high frequencies. In this paper, we characterize the bias under a general specification for the market microstructure noise, where the noise may be autocorrelated and need not be independent of the latent price process.Within this framework, we propose a simple Newey-West type correction of the RV that yields an unbiased measure of volatility, and we characterize the optimal unbiased RV in terms of the mean squared error criterion.Our empirical analysis of the 30 stocks of the Dow Jones Industrial Average index shows the necessity of our general assumptions about the noise process. Further, the empirical results show that the modified RV is unbiased even if intraday returns are sampled every second.

Organized by Anders Rahbek

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

A dual graph construction for higher rank graphs

David Pask, University of Newcastle, New South Wales

Wed May 5 2004, 15:15

Abstract

After giving a brief overview of higher rank graphs and their C*-algebras, we describe a dual graph construction for higher rank graphs. We show that our construction is a natural generalisation of a dual graph construction for directed graphs and their C*-algebras. If there is time we shall give some applications of our results.

Organized by NJL

(kuimf / kuimf)

3

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Generalized Seifert surfaces for colored links

David Cimasoni Université de Dijon et Genève

Wed May 5 2004, 16:15 - 17:15

Abstract

The Seifert surface is a well-known and very useful tool in link theory. For instance, it permits to study the Alexander invariants, the Conway polynomial, and the signature of an oriented link. In this talk, we shall introduce 'generalized Seifert surfaces' for colored links. They provide a geometric interpretation of the multivariable Alexander invariants and the Conway potential function. They also make it possible to define a multivariable signature that generalizes the Levine-Tristarm signature

Organized by Jørgen Ellegaard Andersen

(hammer@imf.au.dk / hammer@imf.au.dk)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG
AALBORG UNIVERSITET

Seminar

On the quantum Fermi accelerator

Pierre Duclos, Université de Toulon et du Var og Centre de Physique Théorique, Marseille

Thu May 6 2004, 13:00

Abstract

The model of a free quantum particle in a one dimensional box with one of its boundary which is periodically pulsating is called the "quantum Fermi accelerator". The central question is whether or not the particle can be infinitely accelerated by this moving boundary. I will give a review of what is known so far on this question.

This talk is aimed at people with an interest in and basic knowledge of quantum mechanics.

Organized by Horia Cornean

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Statistics Seminar

Parametrising hierarchical models for the Gibbs sampler

Martin Sköld Lund University

Thu May 6 2004, 14:15 - 14:15

Abstract

Convergence of MCMC methods for Bayesian inference like the Gibbs-sampler depends crucially on the parametrisation used for the random quantities, yet there are few known general parametrisation-strategies. For hierarchical models, "centered" methods have been advocated in literature. I will discuss natural alternatives; "non-centered" parametrisations, and when they are likely to improve on "centered" and how they can be found.¡br/¿ (Joint work with O. Papaspiliopoulos and G.O. Roberts)

Organized by Søren Asmussen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

MATHEMATICS COLLOQUIUM

An extended class of entropies and its applications

Christophe Vignat, Université de Marne la Vallée

Thu May 6 2004, 15:15

Abstract

The Shannon entropy has proved usefull in many areas (physics, statistics, information theory). Its universality is closely related to the fact that it is maximized by Gaussian distributions under variance constraint; and many important results linked to the special properties of Gaussian distributions (central limit theorem, channel capacity, Fisher information inequalities) have found new interpretations based on Shannon entropy. The underlying idea to the examination of the extended class of Rényi entropies (that contains Shannon entropy as a spacial case) is to obtain some extensions of these general results. Among others, I will present some results and applications about the family of Renyi entropy, including - the distributions that extend the Shannon/Gaussian case - their links with random matrix theory - their links with uniform distributions on the sphere - their behaviour under random convolution

Organized by Peter Harremoës

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

MATHEMATICS COLLOQUIUM

Two Theories of Information: Shannon & Kolmogorov

Peter Grunwald, dr., CWI Amsterdam and European research institute for probability and statistics,

Tue May 11 2004, 15:15

Abstract

We introduce, compare and contrast the theories of Shannon information and Kolmogorov complexity. We investigate the extent to which these theories have a common purpose and where they are fundamentally different. Whereas Shannon information is defined relative to some assumed probability distribution, Kolmogorov complexity is defined for individual sequences, without any external assumptions. We discuss the fundamental relations 'entropy = expected Kolmogorov complexity' and 'Shannon mutual information = expected algorithmic information'. The talk does not assume any prior knowledge of information theory.

Note: This talk replaces the talk by Professor Philip Dawid announced earlier.

KUIMF Editor 2004-04-21 14:40:42

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

MATHEMATICS COLLOQUIUM

The Calabi-Yau conjectures for embedded surfaces

Tobias Colding (New York University, Courant Institute for Mathematical Sciences)

Wed May 12 2004, 14:15

Abstract

In this talk I will discuss the proof of the Calabi-Yau conjectures for embedded surfaces.

The Calabi-Yau conjectures about surfaces date back to the 1960s. Much work has been done on them over the past four decades. In particular, examples of Jorge-Xavier from 1980 and Nadirashvili from 1996 showed that the immersed versions were false; we showed, jointly with Bill Minicozzi, that for embedded surfaces, i.e., injective immersions, they are in fact true.

Organized by Mikael Rørdam

(sduimada / sduimada)

MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

colloquium

The Design Inference as an Extension of Fisherian Significance Testing

W. Dembski

Wed May 12 2004, 15:15 - 16:00

Abstract

Within Fisher's theory of signifcance testing, a single chance hypothesis is eliminated provided that a sample falls within a prespecified rejection region whose probability is in some sense sufficiently small. But what does it mean for a probability to be "sufficiently small"? Why does the rejection region have to be "prespecified," or specified in advance of the sample being taken? And is it possible not just to eliminate a single chance hypothesis but, as it were, to sweep the field clear of chance hypotheses entirely? The design inference attempts to answer these questions. In answering them, some connections with Bayesian decision theory and Shannon information theory will be made.

Organized by Poul G. Hjorth

(dtumat / dtumat)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

Introduction to the modern Minimum Description Length

Peter Grunwald CWI (National Research Institute for Mathematics and Computer Science inthe Netherlan

Wed May 12 2004, 15:15

Abstract

The Minimum Description Length (MDL) Principle is an information-theoretic method for statistical inference, in particular model selection. In recent years, particularly since 1995, researchers have made significant theoretical advances concerning MDL. In this talk we aim to present these results to a wider audience. In its modern guise, MDL is based on the information-theoretic concept of a 'universal model'. We explain this concept at length. We show that previous versions of MDL (based on so-called two-part codes), Bayesian model selection and predictive validation (a form of cross-validation) can all be interpreted as approximations to model selection based on'universal models'. Modern MDL prescribes the use of a certain 'optimal' universal model, the so-called 'normalized maximum likelihood model' or 'Shtarkov distribution'. This is related to (yet different from)Bayesian model selection with non-informative priors. It leads to a penalization of 'complex' models that can be given an intuitive differential-geometric interpretation. Roughly speaking, the complexity of a parametric model is directly related to the number of distinguishable probability distributions that it contains.

Seminar arrangeret under "Velux Visiting Professors Programme". Anders rahbek

Organized by Anders Rahbek

(kuimf / kuimf)

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

The colored Jones polynomial and the A-polynomial of 2-bridge knots

Thang Le Georgia Tech.

Wed May 12 2004, 16:15 - 17:15

Abstract

I will discuss a conjecture mainly due to Garoufalidis, Gelca, and Frohman about the relations between the colored Jones polynomial and the A-polynomial of a knot. I will show some partial results for 2-bridge knots using the calculation of the Kauffman bracket skein module of knot complements.

Organized by Jørgen Ellegaard Andersen

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

SEMINAR IN ANALYSIS

Spectral properties of a family of PDE

M. Solomyak, Weizmann Institute, Israel

Thu May 13 2004, 15:15

Abstract

We study the spectrum of a family of partial differential operators, depending on a real parameter. The family was suggested by a physicist Uzy Smilansky as a model of an irreversible quantum system. The differential expression which defines the action of the operator, does not involve the parameter, it appears only in the boundary conditions. From the point of view of the Perturbation Theory, we are dealing with the operators, defined via their quadratic forms, and the perturbation is only form-bounded, but not form-compact with respect to the unperturbed operator. This situation is rather unusual for this class of problems, which is reflected in the character of results. In particular, the spectral properties of the operator for the small and the large values of the parameter are quite different. Our goal is to describe these result (obtained for all values of the parameter) and to explain their nature.

A large part of the results reported was obtained in cooperation with S. Naboko.

Organized by C. Berg, G. Grubb

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Mathematics Colloquium

Tip of The Iceberg

Poul Hjorth

Thu May 13 2004, 16:15

Abstract

We study the dynamics of icebergs. Specifically, we investigate the 'toppling' or 'rollover' observed for drifting icebergs. The rollover is thought to occur because the ocean melts the iceberg from below, causing its overall mass and mass distribution to change with time. We model the evolution of equilibrium positions for a general homogenous body afloat in an ideal fluid, as this homogenous body is subjected to 'melting', i.e., a slow removal of material from the submerged part. We show that some information about the evolution of stability due to melting can be inferred from the above-surface geometry of the iceberg. Joint with M.V. Deryabin, Moscow.

Organized by Andrew Swann

(sduimada / sduimada)

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MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Miscellaneous notes on Z-stability

Andrew Toms, The Fields Institute, Toronto

Fri May 14 2004, 10:15

Abstract

C*-algebras absorbing the non-type-I complex numbers Z tensorially are known to have some agreeable properties; there is some speculation that the simple, nuclear ones will prove to be the natural class for classification via K-theoretic invariants. We present a variety of evidence supporting this conjecture. In particular, we show that the great majority of classified simple nuclear C*-algebras are Z-stable.

Organized by Mikael Rørdam

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

Extremal Dependence

Sid Resnick, Cornell University

Fri May 14 2004, 14:15

Abstract

For multivariate heavy tailed phenomena, extremal dependence analysis assesses the tendency of large values of components of a random vector to occur simultaneously. This kind of dependence information can be qualitatively different than what is given by correlation which averages over the total body of the joint distribution. Also, correlation may be completely inappropriate for heavy tailed data. We review some techniques, somewhat exploratory in nature, for assessing asymptotic independence. Examples are given: (a) The vector of (internet file size, throughput, duration of transfer); (b) The vector of exchange rate returns relative to the dollar (prior to introduction of the Euro) of (French Franc, German Deutsch Mark, Japanese Yen). In an attempt to formalize a procedure, we introduce a summary measurement called the extremal dependence measure (EDM), a measure of the tendency of large values of components of a random vector to occur simultaneously and show consistency and asymptotic normality properties for the standard case of multivariate regular variation. Initial experiments with the EDM are promising. We also discuss a subfamily of distributions possessing asymptotic independence call the hidden regularly varying class.

Organized by Anders Rahbek

(kuimf / kuimf)

MAT-NYT

Danish Mathematical Society

DMF Generalforsamling og Foredrag

Complete monotonicity and the magic of complex analysis

Professor C. Berg, Københavns Universitet

Mon May 17 2004, 17:15

Abstract

Dagsorden

1. Valg af dirigent.

2. Bestyrelsen aflægger beretning om foreningens virksomhed.

3. Kassereren forelægger til godkendelse regnskabet for det sidst forløbne regnskabsår, forsynet med revisorernes påtegninger.

4. Kassereren foreslår et budget for det kommende år.

5. Valg

   - Formand
   - To bestyrelsesmedlemmer
   - Revisorer

6. Evt.

Efter generalforsamlingen holder Prof. C. Berg, Københavns Universitet et foredrag med titlen:

Complete monotonicity and the magic of complex analysis

Abstract: To establish that a function on the positive half-line is completely monotonic, i.e. the even derivatives are positive and the odd derivatives negative, can be very difficult in spite of Bernsteins famous characterization of these functions as Laplace transforms of positive measures on the positive half-line. If the function is a Stieltjes transform, i.e. an integral of the kernel $1/(x+y)$ against a positive measure in y, then it is clearly completely monotonic. It can be a lot easier to prove that a given function is a Stieltjes transform using the powerful methods of complex analysis. We shall give several examples illustrating this taken from such diverse areas as

- Probability theory
- The Gamma function
- Entropy
- Classical approximations to the exponential function

Organized by Johan P. Hansen

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

MATHEMATICS COLLOQUIUM

The Calabi-Yau conjectures for embedded surfaces

Tobias Colding (New York University, Courant Institute for Mathematical Sciences)

Tue May 18 2004, 15:15

Abstract

In this talk I will discuss the proof of the Calabi-Yau conjectures for embedded surfaces.

The Calabi-Yau conjectures about surfaces date back to the 1960s. Much work has been done on them over the past four decades. In particular, examples of Jorge-Xavier from 1980 and Nadirashvili from 1996 showed that the immersed versions were false; we showed, jointly with Bill Minicozzi, that for embedded surfaces, i.e., injective immersions, they are in fact true.

Organized by

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

Flexible classes of diffusion-type processes with a view to stochastic volatility models

Professor Michael Sørensen, Department of Applied Mathematics and Statistics, University of Copenhag

Wed May 19 2004, 15:15

Abstract

Abstract: Flexible stationary diffusion-type models are presented that can fit both the marginal distribution and the correlation structure found in many time series from e.g. finance and turbulence. Diffusion models with linear drift and a known and pre-specified marginal distribution are discussed, and the diffusion coefficients corresponding many commonly used probability distributions are given explicitly. An approximation to the diffusion coefficient based on saddlepoint approximation techniques is presented. The approximation is useful in cases where there is no explicit expression for the diffusion coefficient. More general models are obtained as sums of diffusions with linear drift, for which the autocorrelation function is a convex combination of exponential functions. It is demonstrated theoretically as well as in an study of turbulence data that such models can fit quite complex correlation structures. Any infinitely divisible distribution satisfying a weak regularity condition can be obtained as marginal distribution.To obtain an even more complex autocorrelation structure, it is necessary to use multidimensional diffusions with linear drift as building blocks. These models, that are of interest in their own right, can be used to construct one-dimensional processes with negative autocorrelation. The processes presented in the talk can be used to model the volatility in a stochastic volatility model and thus obtain models driven purely by Wiener processes with properties similar to the stochastic volatility models driven partly by Levy processes with jumps proposed by Barndorff-Nielsen and Shephard. Particular examples are volatility processes with gamma distributed and the inverse

Gaussian distributed marginal distributions, for which the returns are approximately variance-gamma distributed and normal inverse Gaussian (NIG) distributed, respectively. The fact that these models are Wiener driven makes discussion of derivative pricing straightforward. The lecture is based on joint work with Bo Bibby, Ib Skovgaard and Martin Jacobsen.

Organized by Anders Rahbek

(kuimf / kuimf)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Virtual strings

Vladimir Turaev University of Strassbourg, currently visiting AU

Wed May 19 2004, 16:15 - 17:15

Abstract

A virtual string is a scheme of self-intersections of a closed curve on a surface. We study algebraic invariants of virtual strings as well as two equivalence relations on the set of strings: homotopy and cobordism. We also discuss connections between virtual strings and virtual knots

Organized by Jørgen Ellegaard Andersen

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Mathematics Colloquium

On holomorphic harmonic morphisms and holomorphic conformal foliations

Martin Svensson, Lund

Mon May 24 2004, 14:15

Abstract

A harmonic morphism is a map between two Riemannian manifolds with the property that its composition with a local harmonic function on the codomain is a local harmonic function on the domain. Harmonic morphisms are themselves harmonic maps, satisfying an additional partial conformality condition. This gives the theory an appealing geometrical flavour, whilst making the question of existence and classification in general very hard to answer. However, when the manifolds involved are Kaehler, it is natural to search for harmonic morphisms in the class of holomorphic maps. In some cases, all harmonic morphisms turn out to be holomorphic maps. In this talk I intend to outline some known results for holomorphic harmonic morphisms and describe how the study of these maps has deepened our understanding of more general holomorphic maps and holomorphic conformal foliations.

Organized by Andrew Swann

(sduimada / sduimada)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Statistics Seminar

Algorithms for Reconstructing Shapes from Support-Type Functions

Professor Richard Gardner Western Washington University

Tue May 25 2004, 14:15 - 14:15

Abstract

There are several natural ways to take measurements of an unknown object. One is by means of the support function, which gives for any direction the (signed) distance from some fixed point (usually the origin) to the hyperplane supporting the object orthogonal to that direction. Another is by the distance between the two supporting hyperplanes orthogonal to a given direction. There is also the possibility of measuring the brightness function, which for an n-dimensional object gives the $(n-1)$-dimensional volumes of its orthogonal projections onto hyperplanes; in other words, the areas of its shadows. For convenience we refer to all these as "support-type functions." ¡br¿¡br¿ The talk will survey some algorithms that reconstruct an approximation to a shape from a finite number of noisy (that is, corrupted) measurements of one of the above types. In the case of brightness functions, the algorithms are the result of joint work with an electrical engineer, Peyman Milanfar. These algorithms have been implemented, and some sample reconstructions will be shown. We will also describe some very recent work with Milanfar and Markus Kiderlen in which we establish the convergence of some of the algorithms, even estimating the rates of convergence.

Organized by Eva Bjørn Vedel Jensen

(auimf / auimf)

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MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

colloquium

Coherent phenomena in nonlinear partial differential equations.

Mads Peter Sørensen

Wed May 26 2004, 15:15 - 16:00

Abstract

In the preceding 30-40 years computer hardware and numerical software has undergone a dramatic development. For the applied mathematical sciences this have lead to a breakthrough in our ability to investigate nonlinear systems. Numerical simulations have given important hints for development of analytic tools for nonlinear partial differential equations (PDEs). A prominent example is the discovery of solitons in the late sixties.

The history of solitons starts actually much earlier in 1834 with the experimental observation of a solitary water wave on Union Canal by John Scott Russell. The equation describing this wave was derived by the Dutch scientists Korteweg and de Vries in 1895 and named the KdV equation. Fermi Pasta Ulam (FPU) tried to simulate the equipartition theorem in 1955 by a chain of masses connected by nonlinear springs. They found a now celebrated recurrence phenomenon instead of equipartition! In the continuum limit the FPU model is the KdV equation and this equation was for the first time solved completely in 1967 by Zabusky and Kruskal using an ingenious inverse scattering method. Their method was quickly generalized to take care of the sine-Gordon equation and the nonlinear Schrödinger equation leading to various types of solutions now called solitons.

In this talk a brief history of the soliton will be given and including graphical or animated illustrations of their spectacular properties. However, in the real world, dissipative and energy transfer processes play an important role and perturbation methods together with numerical methods are indispensable for the investigation of perturbed nonlinear PDEs. Illustrating examples will be shown for the sine-Gordon equation extended to two spatial dimensions in a curved domain. Perturbed soliton like structures are examples of coherent dynamical behaviour. From an industrial point of view optical solitons or quasi-solitons are of interest for future all-optical communication systems.

Organized by Carsten Thomassen

(dtumat / dtumat)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

Semi-Nonparametric IV Estimation of Shape-Invariant Engel Curves" (with R. Blundell and X. Chen)

Dennis Kristensen, London School of Economics and University of Wiconsin-Madison

Wed May 26 2004, 15:15

Abstract

This paper concerns the identification and estimation of a shape-invariant Engel curve system with endogenous total expenditure. The shape-invariant specification involves a common shift parameter for each demographic group in a pooled system of Engel curves. Our focus is on the identification and estimation of both the nonparametric shape of the Engel curve and the parametric specification of the demographic scaling parameters. We present a new identification condition, closely related to the concept of bounded completeness in statistics. The estimation procedure applies the sieve minimum distance estimation of conditional moment restrictions allowing for endogeneity. We establish a new root mean squared convergence rate for the nonparametric IV regression when the endogenous regressor has unbounded support. Root-n asymptotic normality and semiparametric efficiency of the parametric components are also given under a set of 'low-level' sufficient conditions. Monte Carlo simulations shed lights on the choice of smoothing parameters and demonstrate that the sieve IV estimator performs well. An application is made to the estimation of Engel curves using the UK Family Expenditure Survey and shows the importance of adjusting for endogeneity in terms of both the curvature and demographic parameters of systems of Engel curves.

Organized by Anders Rahbek

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Election Meeting

Opstillingsmøde

Thu May 27 2004, 10:15 - 10:15

Abstract

Organized by Pia Schytz

(auimf / auimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Seminar

Concurrency with cone manifolds, partial order and Morse theory

Rafael Wisniewski, Dept. of Control Engineering, Aalborg University

Thu May 27 2004, 13:00

Abstract

The work is intended to provide some insight about concurrency theory using ideas from geometry and algebraic topology. We define a topological space containing all traces of execution of the computer program and the information about how time flows. This vast amount of information must be reduced by introducing appropriate equivalence classes. A crucial observation explored in this work is that the computer programs naturally impose a partial order relation, thus desired classification of the execution paths must be done up to homotopy conserving this partial order. A model space used so far is a compact differential manifold with a local partial order. Our aim is to use some ideas of Morse theory to identify the equivalence classes with the critical points of a certain vector field.

The seminar is aimed at mathematicians in general. The talk is not too specialized for mathematicians within other mathematical disciplines than the scientific area of the talk. Students are very welcome, however, they may not understand all of the talk unless they have specialized within the area of the talk.

Organized by

Lisbeth Grubbe Nielsen 2004-05-24 11:17:26

(dmfeditor / dmfeditor)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

SEMINAR IN ANALYSIS

Notes on the Mahler measure of Littlewood polynomials

Tamas Erdelyi, Professor, Texas A&M University

Thu May 27 2004, 15:15

Abstract

Littlewood polynomials are polynomials with each coefficient from -1,1. Fekete polynomials are exhibited as interesting examples of Littlewood polynomials. The magnitude of the Mahler measure of the Fekete polynomials is determined. It is also shown that Littlewood polynomials of even degree with Mahler measure one cannot be semiflat in Littlewood's sense.

If time allows another question of Peter Borwein is answered on the number of zeros of self-inversive Littlewood polynomials on the unit circle.

Organized by C. Berg

(kuimf / kuimf)
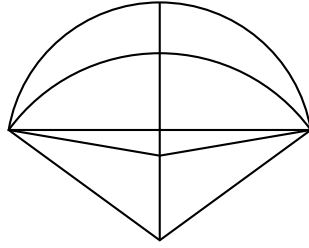
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DANSK MATEMATISK FORENING
MAT-NYT CALENDAR

This document is a hard copy of all entries in the electronic Mat-Nyt calendar of the Danish Mathematical Society covering the period

2004-6-1 – 2004-7-1.

Produced Thu Jan 5, 2006

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Ph.D. part A examination

Integration of Simplicial Forms and Deligne Cohomology

Rune Ljungmann

Tue Jun 1 2004, 13:00 - 13:00

Abstract

Organized by Randi Mosegaard

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Algebra Seminar

The Gröbner fan of a polynomial ideal

Anders Nedergaard Jensen

Tue Jun 1 2004, 14:15 - 14:15

Abstract

Gaussian elimination for systems of linear equations generalizes to systems of non-linear polynomial equations using Gröbner bases and Buchbergers algorithm. A term ordering induces a reduced Gröbner basis for an ideal I and the finite set of reduced Gröbner bases fit into a convex geometric object called the Gröbner fan of I.

We will introduce the Gröbner fan, explain how to compute it and discuss some new algorithms for computing Gröbner bases crossing facets in the Gröbner fan.

Knowledge of basic theory of Gröbner bases is assumed.

Organized by Niels Lauritzen

(auimf / auimf)

3

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Ph.D. part A examination

Normality of Nilpotent Varieties in E_6 in Positive Characteristic

Anne Lund Christophersen

Wed Jun 2 2004, 14:15 - 14:15

Abstract

(auimf / auimf)

4

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Ph.D. Defence

Learning Bayesian Networks with Mixed Variables

Susanne Gammelgaard Bøttcher

Fri Jun 4 2004, 13:00

Abstract

A Bayesian network is a directed acyclic graph that encodes the joint probability distribution for a set of random variables. It consists of two parts, a knowledge base and an inference engine for handling this knowledge.

We present methods for constructing the knowledge base, i.e. learning the parameters and learning the graphical structure. The focus is on Bayesian networks, where the joint probability distribution is conditional Gaussian. To learn the parameters, conjugate Bayesian analysis is used. To learn the graphical structure, network scores for the different structures under evaluation, are calculated. When calculating these scores, the prior distribution for the parameters for each network under evaluation, must be specified. An automated procedure for doing this is presented.

It is also shown how the developed methods can be extended so that they can be used for learning dynamic Bayesian networks with mixed variables.

The software package called deal, written for R, is demonstrated. The package includes procedures for defining priors, estimating parameters, calculating network scores, performing heuristic search as well as simulating data sets with a given dependency structure.

To illustrate the Bayesian learning procedure, a dataset from a study concerning the insulin sensitivity index, is analyzed. The insulin sensitivity index can be used in assessing the risk of developing type 2 diabetes. The results show that the insulin sensitivity index for a non-diabetic glucose tolerant subject can be predicted from glucose and insulin measurements, the gender and the body mass index, using Bayesian networks.

After the defence there will be a small reception. Everybody is welcome!

Organized by

Lisbeth Grubbe Nielsen 2004-05-10 10:49:09

(dmfeditor / dmfeditor)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

MaPhySto-DYNSTOCH Workshop on

INFERENCE FOR PARTIALLY OBSERVED PROCESSES

Mon Jun 7 2004, 09:00 - Wed Jun 9 2004

Abstract

The main purpose of the workshop is to discuss problems of statistical inference for models involving stochastic processes in discrete or continuous time, where complete observation of the process (on a finite time interval say) is not possible. It may of course be the observation pattern itself (e.g. discrete observations from a process in continuous time) that leads to this lack of observations, but it may also be caused by the need for introducing a large and flexible model in order to fit the data, where the flexibility is often obtained by the direct introduction of unobserved quantities such as auxiliary stochastic processes. Examples of partially observed processes are discretely observed diffusions, hidden Markov models, stochastic volatility and other models from finance, various types of time-series models, models with noisy observations and many more. Typically, the likelihood function for the actual observations is analytically untractable, and must either be maximised numerically or one must resort to suitable estimating functions. In many cases, by sheer computing power, it is in fact possible to obtain sensible parameter estimates, but there is certainly still a need to discuss more systematically when and why the methods work: how can one be certain that an estimating equation has only one solution or that some kind of likelihood, which is 'maximised' numerically, is not full of local maxima? How can one know that an estimator is consistent and perhaps even asymptotically Gaussian? And how can one determine which parameter functions it is at all possible to estimate from the partial observations - or what to do if not all the parameters are identifiable or some parameters are nearly non-identifiable? These basic problems of inference are certainly made more difficult when considering models that are only partially observed. It is hoped that the workshop will help to understand better and even raise awareness concerning these important issues! The workshop is co-organised by DYN-STOCH, a research training network financed by The Fifth Framework

Programme of the European Commission , and placed in continuation of
The Fifth DYNSTOCH Workshop to be held in Copenhagen 3.-5. June
2004. For more information, please contact the organisers.

Organized by

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Ph.D. part A examination

**Deformation Quantization of the Moduli Space of Flat
Connections on a Smooth Surface**

Anders Reiter Skovborg

Thu Jun 10 2004, 13:15 - 13:15

Abstract

Organized by Randi Mosegaard

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

MATHEMATICS COLLOQUIUM

The Poincaré-Birkhoff-Witt Theorem, its Ramifications and Generalizations

Tuong Ton-That, Prof., University of Iowa

Thu Jun 10 2004, 15:15

Abstract

The PBW theorem and the theorem on the existence and uniqueness of the universal enveloping algebra of a Lie algebra play a central role in Lie Theory. Both theorems were proven by Henri Poincaré in his seminal article ?Sur les groupes continus? in 1899. In the first part of this talk we discuss the important ideas introduced by Poincaré in this article. In the second part we describe the generalizations, ramifications, and application of the PBW theorem. The third part is devoted to an important application of the PBW theorem in Physics: the notion of Casimir invariants, which, in mathematical terms, form the centre of the universal enveloping algebra of a Lie algebra. We conclude by giving our own generalization of Casimir invariants of a class of infinite-dimensional Lie groups.

Organized by

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

Ph.D. DEFENSE

Gorenstein Homological Algebra

Henrik Holm, Ph.D. student, Mathematics, Copenhagen University

Fri Jun 18 2004, 15:15

Abstract

In classical homological algebra, the fundamental objects studied are the projective, injective and flat modules over some ring.

Auslander-Bridger (1969), and later Enochs-Jenda (1990s), have extended the classes of ordinary projective, injective and flat modules to encompass the so-called G-projective, G-injective and G-flat modules as well ('G' is for 'Gorenstein').

One can attempt to do homological algebra with these larger 'Gorenstein classes' of modules; and this has turned out to be very successful.

In the talk we will present a number of contributions to the theory of "Gorenstein homological algebra". Some of the results are connected to dualizing complexes, introduced by Grothendieck-Hartshorne, and semidualizing modules, introduced by Golod.

Organized by

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Ph.D. part A examination

Theoretical Aspects and Applicatins in Operations Research: Four Scenarios

Christian Roed Pedersen

Mon Jun 21 2004, 13:00 - 13:00

Abstract

Organized by Randi Mosegaard

(auimf / auimf)

11

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Ph.D. part A examination

Modelling Problems in Operations Research: Three Real-life Applications

Rasmus Vinther Rasmussen

Mon Jun 21 2004, 15:00 - 15:00

Abstract

Organized by Randi Mosegaard

(auimf / auimf)

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MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Gæsteforelæsning

Kategorielle Strukturen in mathematischer Linguistik

YANG Xuan, Pæd. Højskole Yili, Xinjiang (Kina)

Tue Jun 22 2004, 13:00 - 14:00

Abstract

Es ist schon bewiesen, dass es eine eins-zu-eins Korrespondenz zwischen *endlichen Automaten* über einem Alphabet Σ und *regulären Sprachen* über Σ gibt. Genauer gesagt, für jeden Automaten M über Σ, ist die von M erkannte Sprache $L(M)$ regulär; und umgekehrt, für jede reguläre Sprache L, gibt es einen Automaten M, so dass $L(M) = L$ gilt.

Nun will ich versuchen, dieses Phänomen in kategorieller Sprache zu beschreiben, so dass die obige Korrespondenz nicht nur die Objekte den Objekten zuordnet, sondern auch die Morphismen den Morphismen, das heißt, diese Korrespondenz ist eine funktoriale Äquivalenz zwischen der Kategorie EA_Σ endlicher Automaten über Σ und der Kategorie RS_Σ regulärer Sprachen über Σ.

Man hat die Entsprechung zwischen $Ob(EA_\Sigma)$ und $Ob(RS_\Sigma)$ konstruiert. Um die Funktorialität dieser Entsprechung zu beweisen, hat man noch jedem Morphismus von EA_Σ einen Morphismus von RS_Σ zuzuordnen.

Diese Zuordnung besteht aus drei Schritten:

Zuerst muss man noch die Morphismen von EA_Σ (bzw. RS_Σ) definieren, die bereits endliche Automaten (bzw. reguläre Sprachen) als Objekte besitzt. Ist dieses getan, dann bildet EA_Σ (bzw. RS_Σ) eine Kategorie.

Zweitens muss man die obigen Korrespondenzen ergänzen (fortsetzen), damit sie Funktoren werden. Diese Korrespondenzen sind schon zwischen den Objekten der beiden Kategorien gebildet. Damit diese Funktoren werden, soll man zu jedem Morphismus $f : M_1 \to M_2$ von EA_Σ einen besonderen Morphismus $\varphi : L(M_1) \to L(M_2)$ von RS_Σ finden, der f entspricht, derart dass diese Entsprechung die Verknüpfung der Morphismen bewahrt. Und umgekehrt.

Schließlich muss man beweisen, dass der oben definierte Funktor (als L bezeichnet) eine Äquivalenz ist, d.h. dass es einen Funktor $\mathbf{A} : RS_\Sigma \to EA_\Sigma$ gibt (dafür muss man ebenso wie oben auch mit den Morphismen arbeiten), so dass $\mathbf{AL}$ und $\mathbf{LA}$ jeweils zu Id_{EA} und Id_{RS} (natürlich) isomorph sind.

Organized by Bernhelm Booss-Bavnbek (RUC/IMFUFA) og Hartmut Haberland (RUC/Institut for Sprog og Kultur)

(rucimfufa / rucimfufa)

14

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

MATHEMATICS COLLOQUIUM

Convex geometry and Gröbner bases

Niels Lauritzen, Aarhus

Tue Jun 22 2004, 15:15

Abstract

We will give a brief introduction to Gröbner bases and algorithms for solving systems of non-linear (polynomial) equations. Then we sketch how convex geometry leads to new algorithms for computing Gröbner bases.

Organized by

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Statistics Seminar

On variances of local stereological estimators

Zbynek Pawlas Charles University, Praha

Thu Jun 24 2004, 14:15 - 14:15

Abstract

One of the important unsolved problems in stereology concerns the stereological estimation of particle size distributions without specific assumptions about particle shape. It has been known for some time how to estimate stereologically the mean particle volume for particles of varying shape. In applications, the resulting distribution of estimated particle volumes has been used as an estimate of the distribution of the true particle volumes. It is clearly important to be able to judge when such a procedure is justified.

In the present talk, we study the statistical properties of a local stereological estimator of particle volume. It is shown that the variance of the estimator can be decomposed into the variance due to the stereological estimation procedure and the variance due to the variability in the particle volumes. It turns out that these two variance components can be estimated separately, from sectional data. If the variance due to the stereological estimation procedure is small compared to the variance due to the variability in the particle volumes, the distribution of estimated particle volumes can be regarded as an estimate of the distribution of the true particle volumes.

Organized by Eva Bjørn Vedel Jensen

(auimf / auimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG
AALBORG UNIVERSITET

Seminar

Classical and quantum dynamics with electromagnetic fields, homogeneous of degree -1

Ira Herbst, University of Virginia, USA

Fri Jun 25 2004, 13:00

Abstract

The seminar is aimed at mathematicians in general, i.e. is not too specialized for mathematicians within other mathematical disciplines than the scientific area of the talk. Students are very welcome, however, they may not understand all of the talk unless they have specialized within the area of the talk.

Organized by Horia Cornean

Lisbeth Grubbe Nielsen 2004-06-16 09:19:14

(dmfeditor / dmfeditor)
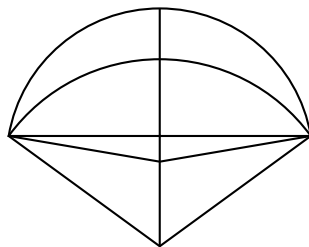
DANSK MATEMATISK FORENING
MAT-NYT CALENDAR

This document is a hard copy of all entries in the electronic Mat-Nyt calendar of the Danish Mathematical Society covering the period

2004-7-1 – 2004-8-1.

Produced Thu Jan 5, 2006

MAT-NYT

Seminar

Higher-order plasticity theories - a comparison of predicted size effects and localisation behaviour

Assoc. Prof., dr.ir. R.H.J. Peerlings

Thu Jul 1 2004, 15:00

Abstract

Conventional plasticity theories are unable to capture the observed increase in strength of metallic structures with diminishing size. They also give rise to ill-posed boundary value problems at the onset of material softening. In order to overcome both deficiencies, a range of higher-order plasticity theories have been formulated in the literature. Three of these theories are compared in terms of their prediction of a size effect and the handling of localisation effects. Size effect predictions for foils in bending are obtained analytically and are compared with existing experimental data. A study of one-dimensional harmonic incremental solutions from a uniform reference state allows one to assess the nature of material localisation in the higher order theories. These analyses show that only one of the theories considered - the Fleck-Hutchinson strain gradient plasticity theory based upon the Toupin-Mindlin strain gradient framework - shows acceptable behaviour in both analyses. The other theories show either a nonphysical size effect or a pathologically localised post-peak response.

Organized by Danish Center for Applied Mathematics and Mechanics

(bec@mek.dtu.dk / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

What does it mean to classify something? What things can one hope to classify?

George Elliott, Canada Research Chair in Mathematics, University of Toronto

Wed Jul 7 2004, 15:15

Abstract

The title already gives some idea of the questions that will be discussed. One idea that arises naturally in studying the classification of operator algebras (C*-algebras. von Neumann algebras, subfactors), and, to the extent that this has been pursued, the actions of groups on these, is to what extent similar techniques (K-theoretical type invariants, the approximate intertwining of sequences) can be applied in a broader setting. It turns out that a classification that may be of some interest, although the classifying category (i.e., the category of labels) is only an abstract one (an interesting problem is to identify this with a concrete category in particular cases), can be obtained in a remarkably general setting. (Roughly speaking, all that is needed is non-commutativity of the objects, so that the classifying category will be a simplification of the original one, and also a countability hypothesis—so that the technique of intertwining can be applied.)

Organized by

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Flow equivalence and graph algebras

Teresa Bates, Lecturer, University of New South Wales

Fri Jul 9 2004, 13:15

Abstract

Organized by

(kuimf / kuimf)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Projective Toric Varieties and Centrally Symmetric Polytopes

Annette A'Campo-Neuen Basel

Tue Jul 27 2004, 14:15 - 14:15

Abstract

The theory of toric varieties provides a fruitful link between combinatorial questions on convex polytopes and algebraic geometry. For example there is a beautiful characterization of the possible numbers of faces of a simplicial convex polytope due to P. McMullen, L. Billera, C. Lee and R. Stanley. Stanley could prove the necessity of the conditions by translating them into topological statements on the projective toric variety associated to the polytope.

In this talk, I will consider polytopes with a central symmetry, but not necessarily simplicial, and prove a lower bound for a certain combinatorial invariant, using intersection cohomology.

Organized by Jørgen Ellegaard Andersen

Oddbjørg Wethelund 2004-07-26 12:13:20

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Knots from local Morse functions

Norbert A'Campo Basel
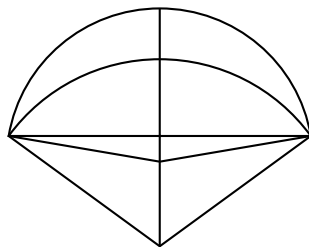
Wed Jul 28 2004, 16:15 - 16:15

Abstract

A geometric construction that creates a knotted codimension 2 submanifold in $S^2n - 1$ from a selfindexing Morse function on D^n will be presented.

Organized by Jørgen Ellegaard Andersen

DANSK MATEMATISK FORENING
MAT-NYT CALENDAR

This document is a hard copy of all entries in the electronic Mat-Nyt calendar of the Danish Mathematical Society covering the period

2004-8-1 – 2004-9-1.

Produced Thu Jan 5, 2006

MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

colloquium

Example of localized eigen-states (scars) in quantum chaos

Frédéric Faure

Wed Aug 4 2004, 15:15 - 16:00

Abstract

The "Arnold cat map" or "linear automorphism on the torus" is a very simple example of hyperbolic dynamics on the torus. We consider a quantized version of it, which is therefore a very simple model for the study of quantum chaos. For this very particular quantum dynamics which posses many symmetries, we describe the construction of eigen-states which, in the semi-classical limit $h \rightarrow 0$, concentrate themselves partially on a periodic orbit (chosen a priori). More precisely, the associated semi-classical measure is 1/2 the Liouville measure on phase space plus 1/2 the Dirac measure on this periodic orbit. It is known (Snirelman "Quantum Ergodicity" theorem) that for almost all eigen-states-sequences, the semi-classical measure is the Liouville measure. The examples we propose are therefore exceptions to this general rule. We will interpret these exceptional states as a result of constructive interferences between periodic orbits. Note that the opposite, "Quantum Unique Ergodicity" has been conjectured by Z.Rudnick and P.Sarnak for eigen-functions of the Laplacian on manifolds with negative sectional curvature, and proven by E.Lindenstrauss in the case of an arithmetic surface of constant negative curvature.

Organized by Bodil Branner

(dtumat / dtumat)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Specialeforedrag

En generalisering af Shors kvantealgoritme til endelige grupper og anvendelser

Troels Windfeldt

Fri Aug 6 2004, 15:15

Abstract

Den berømte fysiker Richard P. Feynman observerede i 1982 at det forekom vanskeligt at simulere et kvantemekanisk system på en klassisk computer, hvilket førte til ideen om en kvantecomputer. Dette blev startskuddet til den gren af matematikken der med et engelsk udtryk kaldes for quantum computation. Det hidtil st?rste gennembrud kom i 1994 da Peter W. Shor opdagede effektive kvantealgoritmer for faktorisering og det Diskrete Logaritme Problem. Disse algoritmer har givet anledning til det s?kaldte Hidden Subgroup Problem, som kan formuleres således:

Problem. Lad G være en endelig gruppe og S en endelig mængde. Antag, at $f : G \to S$ er konstant på sideklasserne af undergruppen H i G og at f er injektiv på G/H. Bestem undergruppen H.

En effektiv algoritme for Hidden Subgroup Problem er endnu ikke kendt omend blandt andre Hallgren, Russell og Ta-Shma i 2001 har opnået delvise resultater. I foredraget vil jeg komme ind på grundlaget for Shors algoritme og resultater angående Hidden Subgroup Problem ligesom jeg vil skitsere egne bidrag.

Organized by

(kuimf / kuimf)

MAT-NYT

Danish Mathematical Society

DMF Sommerskole

SOMMERSKOLE 2004

Mon Aug 9 2004, 09:00 - Wed Aug 11 2004, 17:00

Abstract

DELTAGERE:

Sommerskolen har 2.-dels studerende og ph.d.-studerende i matematik ved landets universiteter som primær målgruppe og forudsætter en tilsvarende matematisk modenhed. Skolen er dog åben for andre interesserede og er årligt tilbagevendende.

TEMAER:

Sommerskolen vil i 2004 beskæftige sig med to forskellige aktuelle temaer

- Gröbnerbaser eller Gausselimination for viderekone

- Matematiske Modeller i Bioinformatik

- Aspekter af algebraens historie mellem 1750-1850

Organized by Johan P. Hansen og Niels Lauritzen, Institut for Matematiske Fag, Aarhus Universitet

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Operator algebra seminar

On the unique trace case of Elliott's Conjecture

Nate Brown, Penn State University

Wed Aug 18 2004, 14:15 - 16:00

Abstract

I will give an overview of what sort of classification results are known in the case of (simple, nuclear, etc.) algebras with unique tracial states. I will also propose a strategy for attacking the general case. I hope that approximation properties of traces will be useful in this regard, and there is some evidence to suggest this is the case, but the strategy I am suggesting still appears to have some serious technical difficulties to overcome.

Organized by Mikael Rørdam

(sduimada / sduimada)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Curves on surfaces, charts, and words

Vladimir Turaev Institut de Recherche Mathématique Avancée, Strasbourg, France

Wed Aug 18 2004, 16:15 - 16:15

Abstract

I will give a combinatorial description of closed curves on surfaces in terms of certain permutations called charts. Automorphisms of curves will be described in terms of charts and then the total number of topological types of curves will be computed. At the end I will discuss relations between charts, curves, words, and complex structures on surfaces.

Organized by Jørgen Ellegaard Andersen

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Seminar

Ruin probability minimization and dividend distribution optimization in diffusion models

Michael Taksar, Dept. of Mathematics, University of Missouri, Columbia

Thu Aug 19 2004, 13:00

Abstract

We will consider a model of an insurance companies with different modes of risk and financial control. Different types of reinsurance correspond to the risk reduction techniques of the insurance, while financial control corresponds to a more familiar portfolio rebalancing. There are different objective which the company may pursue. One is the classical minimization of the ruin probabilities. Another one is the dividend pay-out maximization. The later merges with the classical finance issue of utility optimization by a small investor, pioneered by Merton. Diffusion approximation enables one to get a closed form solution to many problems and see the structure of the optimal policy. Mathematically, the problem becomes a mixed singular/regular control of a diffusion process, whose analytical portion corresponds to a solution of nonlinear ordinary or partial differential equations.

The seminar is aimed at mathematicians in general. The talk is not too specialized for mathematicians within other mathematical disciplines than the scientific area of the talk. Students are very welcome, however, they may not understand all of the talk unless they have specialized within the area of the talk.

Organized by Bjarne Højgaard

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Statistics Seminar

Ruin probability minimization and dividend distribution optimization in diffusion models

Michael Taksar Department of Mathematics, University of Missouri, Columbia

Mon Aug 23 2004, 15:00 - 15:00

Abstract

We will consider a model of insurance companies with different modes of risk and financial control. Different types of reinsurance correspond to the risk reduction techniques of the insurance, while financial control corresponds to a more familiar portfolio rebalancing. There are different objectives which the company may pursue. One is the classical minimization of the ruin probabilities. Another one is the dividend pay-out maximization. The later merges with the classical finance issue of utility optimization by a small investor, pioneered by Merton. Diffusion approximation enables one to get a closed form solution to many problems and see the structure of the optimal policy. Mathematically, the problem becomes a mixed singular/regular control of a diffusion process, whose analytical portion corresponds to a solution of nonlinear ordinary or partial differential equations.

Organized by Søren Asmussen

(auimf / auimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

Specialeforedrag

Eulerligningen. Et symmetriresultat for periodiske b?lger

Mads Haar

Tue Aug 24 2004, 14:15

Abstract

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MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Operator algebra seminar

Calculation of 1-cohomology and construction of non-orbit equivalent actions

Sorin Popa, University of California, Los Angeles

Tue Aug 24 2004, 14:15 - 16:00

Abstract

Organized by Mikael Rørdam

(sduimada / sduimada)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Topology Seminar

Splittings of free loop spaces on projective spaces

Associate Professor Marcel Bökstedt Dep. of Mathematical Sciences, AU

Tue Aug 24 2004, 16:15 - 16:15

Abstract

Recent homotopy theoretical calculations (j. with Ottosen) indicated a splitting of the suspension spectrum of free loop spaces on projective spaces into finite dimensional complexes. This calculation used a lot of homotopy theory and non commutative homological algebra. ¡br¿¡br¿ In the middle of the 70's, Ziller approached free loop spaces of symmetric spaces, using Morse theory and differential geometry. This approach goes back to Bott and Samelson. ¡br¿¡br¿ By analyzing the methods of Ziller and applying relatively simple homotopy theory, we construct these splittings.

Organized by Jørgen Ellegaard Andersen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Ph.D.-thesis defence

Characteristic Classes of Surface Bundles

Søren Galatius

Wed Aug 25 2004, 14:00 - 14:00

Abstract

Organized by Randi Mosegaard

(auimf / auimf)

MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

colloquium

Summations- og integralformler for $\zeta(3)$ og beslægtede konstanter

Ernst E. Scheufens

Wed Aug 25 2004, 15:15 - 16:00

Abstract

Det er velkendt, at Fourierrækker for x^{2p} kan bruges til at bestemme eksakte værdier for $\zeta(2p)$, $p \in N$, fordi Fourierrækkerne er cosinus-rækker.

Da Fourierrækker for x^{2p+1} er sinus-rækker, kan man ikke på samme måde bestemme eksakte værdier for $\zeta(2p + 1)$. Man kan dog alligevel få noget ud af sinus-rækkerne ved at lave et lille trick, der består i at dividere med x og dernæst integrere fra nul til uendelig. Herved opnås, at man får $\pi/2$ multipliceret med summen af Fourierkoefficienterne. Denne sum indeholder information om konstanter beslægtet med $\zeta(2p + 1)$. Der er på denne måde fundet nye rækker for Apéry's konstant og dermed beslægtede. Dette kan være en ny angrebsvinkel til at finde sammenhænge mellem $\zeta(3)$ og andre matematiske konstanter.

Ud fra de nye rækker er desuden udledt integralformler, der kan sammenlignes med velkendte formler fra litteraturen.

Organized by Carsten Thomassen

(dtumat / dtumat)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Seminar

Bivariant K-theory and algebraic K-theory.

Professor Dr. Joachim Cuntz University of Munster

Thu Aug 26 2004, 10:15 - 11:15

Abstract

¡p¿ We introduce a new version of topological K-theory, K-homology and bivariant K-theory in a nearly completely algebraic manner. These theories can be applied and computed for many new types of algebras. A prominent example is the Weyl algebra. ¡/p¿

¡p¿ The determination of the coefficients of the bivariant theory which is crucial for explicit computations, relies on some arguments from algebraic K-theory.¡/p¿

Organized by Klaus Thomsen

Klaus Thomsen 2004-08-18 11:59:50

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Operator algebra seminar

Classification results for factors associated to actions of property (T) groups by Bernoulli shifts

Sorin Popa

Fri Aug 27 2004, 12:15 - 14:00

Abstract

Organized by Mikael Rørdam

(sduimada / sduimada)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Operator algebra seminar

Estimates for Voiculescu's non-microstates free entropy dimension

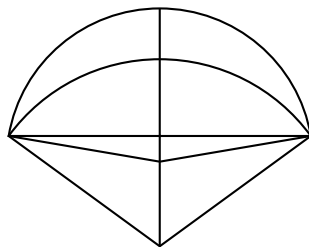**Dimitri Shlyakhtenko, University of California, Los Angeles**

Tue Aug 31 2004, 14:15 - 16:00

Abstract

Organized by Mikael Rørdam

(sduimada / sduimada)

DANSK MATEMATISK FORENING
MAT-NYT CALENDAR

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Produced Thu Jan 5, 2006

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Topology Seminar

Automorphisms of root data and normalizers of maximal tori

Kasper Andersen Dept. of Mathematical Sciences, AU

Wed Sep 1 2004, 16:15 - 17:15

Abstract

Classical work of Tits gives an explicit description of the normalizer of a maximal torus in a compact connected Lie group in terms of its root datum. Recently Dwyer and Wilkerson gave a homological interpretation of Tits' result which generalizes to 2-compact groups. In joint work with J. Grodal we use these results to give an algebraic description of the automorphism group of the maximal torus normalizer in a compact connected Lie group or a connected 2-compact group. As a consequence we get a conjectural description of the outer automorphism group of a connected 2-compact group as a subgroup of the outer automorphism group of the associated maximal torus normalizer.

Organized by Jørgen Ellegaard Andersen

(auimf / auimf)

MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Global Trade Analysis Project - en matematisk analyse af en model. (Studenterprojekt)

Martin Eggert & Sophus Nørby (IMFUFA)

Thu Sep 2 2004, 13:00 - 15:00

Abstract

Global Trade Analysis Project, GTAP er WTO's (Worlds Trade Organization) matematiske model for verdenssamhandlen. Modellen ligger blandt andet til grund for den stærkt omdiskuterede økonomibaserede prioriteringsliste for verdens problemer, som blev udarbejdet under Copenhagen Consensus 2004 i maj. I vores oplæg giver vi et overblik over den matematiske opbygning af GTAP modellen og gennemgår de matematiske antagelser, der må laves for at opstille og løse modellen. Efterfølgende diskutere vi antagelsernes indflydelse på modellens udsagnskraft og ikke mindst diskutere vi mulighederne for at vurdere hvilke usikkerheder der er forbundet med brug af denne model og de andre modeller i klassen af såkaldte Computeable General Eqilibrium models. En væsentlig pointe her er at det viser sig at være umuligt at evaluere modellenes usikkerheder, alt imens den politiske, samfundsmæssige og øknomiske debat for og imod økonmisk prioritering raser.

Organized by Carsten Lunde Petersen

(rucimfufa / rucimfufa)

3

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

Christian U. Jensen Symposium

Algebra and Number Theory

Various speakers

Fri Sep 3 2004, 13:15

Abstract

Organized by Hans-Bj?rn Foxby, S?ren J?ndrup, Ian Kiming, J?rn B?rling Olsson, Anders Thorup, Noriko Yui

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Ph.D.-thesis defence

p-adic Point Counting on Elliptic Curves

Marc Skov Madsen

Mon Sep 6 2004, 12:30 - 12:30

Abstract

5

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Convolution products in $L^1(R^+)$ and applications

Pedro Jose Miana, Universidad de Zaragoza

Wed Sep 8 2004, 15:15

Abstract

We introduce a dual convolution product in $L^1(R^+)$ which is non-commutative and non-associative. We prove several equalities between the usual convolution product and the dual convolution product. We give new results about integral transforms, fractional calculi, trigonometric functions and special functions.

Organized by NJL

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Topology Seminar

Splitting results for free loop spaces via non Abelian homological algebra.

Iver Ottosen Dept. of Mathematical Sciences, AU

Wed Sep 8 2004, 16:15 - 16:15

Abstract

Let K denote the category of unstable algebras over the (mod two) Steenrod algebra. The endofunctor on K, which sends an object to the object tensored with the cohomology of the circle, has a left adjoint functor D. ¡br¿¡br¿ For a simply connected space X there is a spectral sequence converging to the cohomology of the free loop space LX, viewed as an object in K. Its E_2-term is the direct sum of the non Abelian derived functors of D evaluated at the cohomology of X. ¡br¿¡br¿ When the cohomology of X is a truncated polynomial algebra, the E_2-term is computable, and the spectral sequence collapses. In particular one obtains formulas for the Steenrod algebra action on the cohomology of LX. These formulas led us to conjecture a stable splitting of LX in terms of Thom spaces of certain vector bundles over X.

Organized by Jørgen Ellegaard Andersen

(auimf / auimf)

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MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Operator algebra seminar

A construction of simple purely infinite C*-algebras

Takeshi Katsura, Hokkaido University

Fri Sep 10 2004, 12:15 - 14:00

Abstract

I introduced the notion of topological graphs and the method how to define C*-algebras from them. This is a generalization of graph algebras as well as homeomorphism C*-algebras. In the talk, I will show that every Kirchberg algebras satisfying the UCT arise as C*-algebras of topological graphs. I will also discuss the application of this fact.

Organized by Mikael Rørdam

MAT-NYT

INSTITUT FOR MATEMATISKE FAG
AALBORG UNIVERSITET

Seminar

Ecological communities - spatial point process modelling of highly complex systems

Janine B. Illian, University of Abertay Dundee, Skotland

Fri Sep 10 2004, 13:00

Abstract

Over the last decade ecologists have become more and more aware of the necessity to model ecological plant communities from an indiviual based perspective. Furthermore the continuously improving technology, e.g. of geographical information systems (GIS) and increasing computer power, will on the one hand produce more and more datsets detailling the exact locations of species and on the other hand facilitate the analysis of these. Due to the growing awareness of the role of space in ecological modelling, it is most likely that an increasing amount of data detailling individual plants' locations will become available and will have to be analysed with appropriate methods applying spatial point process theory.

This talk focusses on the analysis of a multi-type spatial point pattern formed by a natural plant community in the Mediterranean type shrub- and heathland of the south western area of Western Australia, consisting of the exact locations of 6378 plants from 67 species on a 22m by 22m plot. The vegetation in the area is Banksia low woodland, which is susceptible to regular natural fires ocurring approximately every ten years. Plants have adapted to this, through the development of regeneration strategies. We fit a hierarchical model where the hierarchical construction of the model reflects the assymmetric interaction between species with different regeneration strategies. This reflects the asymmetrical interaction between the different types of species. Initially we assume a fixed interaction radius for all species and apply both, a frequentist and a Bayesian estimation approach. In a more general Bayesian setting we let the interaction radius vary for all plants.

Organized by Jesper Møller

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Q-seminar

On perturbation theory for Pauli-Fierz type operators

Christian Hainzl, Department of Mathematics, Univ. of Copenahgen

Fri Sep 10 2004, 13:15

Abstract

Organized by B.Durhuus

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Foredrag, Dansk Matematisk Forening

Four colours suffice

Robin Wilson, Head of the Pure Mathematics Department at the Open University, Fellow of Keble Colleg

Mon Sep 13 2004, 17:15

Abstract

In this illustrated talk I shall outline the history and proof of the four colour theorem, that four colours are sufficient to colour any map in such a way that neighbouring countries are coloured differently. The talk will outline contributions by De Morgan, Cayley, Kempe, Tait, Heawood, Birkhoff, Heesch, Haken and Appel, and include a video sequence in which Appel and Haken talk about their solution.

Organized by Poul Hjort/SE

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Lewis Carroll in Numberland

Robin Wilson

Tue Sep 14 2004, 13:00 - 14:30

Abstract

Lewis Carroll (Revd Charles Dodgson) is best known for the 'Alice' books, and also as a pioneering Victorian photographer. But he was a mathematics teacher at Oxford. In this talk I describe his mathematical work – in geometry, algebra, logic and recreational mathematics.

Organized by Carsten Lunde Petersen

(rucimfufa / rucimfufa)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Seminar

Central limit theorems for functions of the increments of the Brownian semimartingales and their applications in finance

Mark Podolskij Ruhr-University, Bochum, Germany

Tue Sep 14 2004, 13:15 - 13:15

Abstract

Consider a semimartingale of the form $Y_t = Y_0 + \int_0^t a_s ds + \int_0^t \sigma_{s-} dW_s$, where a is a locally bounded predictable process and σ (the volatility) is an adapted right-continuous process with left limits and W is a Brownian motion.

We define a process $X^n(g,h)_t = \frac{1}{n} \sum_{i=1}^{[nt]} g(\sqrt{n}\Delta_i^n Y) h(\sqrt{n}\Delta_{i+1}^n Y)$, where $\Delta_i^n Y = Y_{\frac{i}{n}} - Y_{\frac{i-1}{n}}$ and g, h are two given continuous functions. We show that $X^n(g,h)_t$ converges locally in time, in probability, to a limiting process $X(g,h)_t$. Under some additional assumptions we prove a central limit theorem for the process $\sqrt{n}(X^n(g,h)_t - X(g,h)_t)$. In particular we derive an asymptotic distribution theory for the realised bipower variation process $V(Y;r,s)_t^n = n^{\frac{r+s}{2}-1} \sum_{i=1}^{[nt]} |\Delta_i^n Y|^r |\Delta_{i+1}^n Y|^s$, where r and s are nonnegative reals with $r+s > 0$. Moreover we give a review of some further generalisations of the above results.

Organized by Ole Eiler Barndorff Nielsen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Algebra Seminar

Linear sections of Grassmann varieties – Grassmann codes

Professor Trygve Johnsen University of Bergen

Wed Sep 15 2004, 14:15 - 14:15

Abstract

There are natural ways of producing linear codes from algebraic varieties. In this talk we will study codes produced from Grassmann varieties, and see how the hierarchy of higher weights of the codes are determined by various linear sections of these varieties. We discuss natural questions and hypotheses connected to Schubert subvarieties of the Grassmannians.

Organized by Anders Skovsted Buch

(auimf / auimf)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Knots and the adjoint quotient

Ivan Smith University of Cambridge

Wed Sep 15 2004, 16:15 - 16:15

Abstract

I will describe joint work with Paul Seidel which defines an invariant of oriented links in the three-sphere by combining ideas from the algebraic geometry of Lie algebras with Lagrangian Floer homology. We conjecture that the invariant is a geometric model for Mikhail Khovanov's combinatorially defined homology groups.

Organized by Jørgen Ellegaard Andersen

MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Kohærente fænomener i ikke-lineære partielle differentialligninger

Mads Peter Sørensen (Institut for Matematik, DTU)

Thu Sep 16 2004, 13:00 - 15:00

Abstract

I de seneste 30-40 år har computer hardware og software undergået en dramatisk udvikling. For anvendt matematik har dette betydet et afgørende gennembrud for studiet af ikke-lineære systemer. Numeriske simuleringer har givet vigtige vink i udviklingen af analytiske værktøjer for ikke-lineære partielle differentialligninger. Et prominent eksempel er opdagelsen af de såkaldte solitoner i anden halvdel af tresserne. I dette foredrag gives et kort resume af teorien for solitoner illustreret med computer animationer af disse løsningers særlige egenskaber. I den fysiske verden spiller tab og energitilførsel en vigtig rolle og perturbationsmetoder samt numeriske metoder er derfor uundværlige i studiet af perturberede ikke-lineære partielle differentialligninger. Eksempler vil blive vist for sine-Gordon ligningen i to rumlige koordinater i et ikke rektangulært domæne. Perturberede soliton lignende tilstande er eksempler på kohærent dynamik. Et andet eksempel er dyrkning af énkrystalinsk silicium hos Topsil a/s, Frederikssund.

Organized by

(rucimfufa / rucimfufa)

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MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Operator algebra seminar

Towards a theory of classification

George Elliott

Thu Sep 16 2004, 14:15 - 16:00

Abstract

Organized by Mikael Rørdam

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Analysis Seminar

Logarithmic Sobolev inequalities I

Professor Bent Ørsted Dep. of Mathematical Sciences, AU

Thu Sep 16 2004, 15:15 - 16:00

Abstract

The logarithmic Sobolev inequalities correspond to a certain limit of the usual Sobolev inequalities; they have several applications, for example in quantum field theory, and most recently in Perelman´s method for attacking the Poincaré conjecture. In this talk, and its sequel, we shall discuss the logarithmic Sobolev inequalities and give several proofs, some of which allow generalizations to other situations, including one for CR-geometry.

Organized by Alexei Venkov

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG
AALBORG UNIVERSITET

Seminar

Who invented Steiner triple systems - and why?

Robin J. Wilson, Pure Mathematics Department, The Open University

Fri Sep 17 2004, 14:00

Abstract

This illustrated talk surveys the early history of an area of combinatorics now known as design theory. I shall look at the origins of so-called Steiner triple systems and the Kirkman 'schoolgirls problem' and discuss the work of other contributors to the subject. No previous knowledge of triple systems or design theory is assumed.

Target group: The above seminar is aimed at everybody with an interest in mathematics. The purpose of this kind of talk is to pass on enthusiasm to the audience, to promote mathematics and the chosen topic as interesting and relevant.

Organized by Lars Døvling Andersen

Lisbeth Grubbe Nielsen 2004-09-01 12:10:21

(dmfeditor / dmfeditor)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Topology Seminar

String Topology and Gromov-Witten theory for cotangent bundles

Ralph Cohen Standford

Fri Sep 17 2004, 14:15 - 14:15

Abstract

Organized by Ib Madsen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

Representation theory on vector error correction models with nonlinear adjustments

M. Rodrigo Dupleich-Ulloa, Department of economics, University of Warwic

Fri Sep 17 2004, 14:15

Abstract

This paper studies the partial extensions to the Granger representation theorem for nonlinear cointegrated systems. The analysis focuses on Vector Error Correction models with nonlinear adjustemnts using both Markov chain theory, similar to Bec and Rahbek(2002), and Near Epoch Dependence processes, similar Escribano and Mira(2002). The paper shows that these two strands in the literature of asymptotic theory on dynamic nonlinear models are closely linked, particularly on stochastic stability conditions.

Organized by Anders Rahbek

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

MATHEMATICS COLLOQUIUM

A taste of non-classical logic: Kleene algebras and beyond

H. A. Priestley, Mathematical Institute, University of Oxford

Tue Sep 21 2004, 15:15

Abstract

In the 1850s, George Boole conceived the idea of modelling human reasoning by an 'algebra of propositions'. Nowadays, we interpret Boole's insight as the result that propositional logic can be represented by a Boolean algebra. In turn, any Boolean algebra can be concretely represented as an algebra of sets. In recent decades computer science has provided a major incentive for devising mathematical tools for analysing a wide variety of formal languages via semantic models. This talk will give an informal introduction to the role that algebra, order theory and topology can play in this endeavour. It will focus on some simple non-classical first-order logics (such as those in which propositions can take value 'possible' as well as the Boolean values of 'true' and 'false'), and briefly discuss the relevance of such logics to various areas of application.

Organized by Mai Gehrke

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Algebra Seminar

Methods from Gorenstein homological algebra

Adjunkt Henrik Holm Aarhus Universitet

Wed Sep 22 2004, 14:15 - 14:15

Abstract

¡p¿ During the last decade, the interest in various homological
dimensions has got a revival in commutative algebra. The invention
of
the complete intersection dimesion (Avramov et al., 1998) and the
Cohen–Macaulay dimension (Gerko et al., 2001) are examples of this
trend.
¡/p¿ ¡p¿ The talk will mainly focus on the so-called Gorenstein dimen-
sions,
which were introduced and studied by Auslander–Bridger in 1969, and
generalized by Enochs–Jenda in the beginning of the 1990s. The main
motivatin for studying the, say, Gorenstein projective dimension is
that it characterizes local Gorenstein rings in the same way as the
(usual) projective dimension characterizes local regular rings,
according to the famous Auslander–Buchsbaum–Serre theorem.
¡/p¿ ¡p¿ A "guided tour" in Gorenstein dimensions will be given, but
special
attention will be paid to the fact that a dualizing complex (if such
exists) can detect finiteness of these dimensions in a useful and
interesting way.
¡/p¿

Organized by Henning Haahr Andersen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Analysis Seminar

Logarithmic Sobolev inequalities II

Professor Bent Ørsted Dep. of Mathematical Sciences, AU

Thu Sep 23 2004, 16:15 - 17:00

Abstract

In this talk we will show how the applications of the inequalities arise, for example proving contractivity results for natural semigroups. New results are obtained for all rank one geometries.

Organized by Alexei Venkov

Maiken Kirdorf Nielsen 2004-09-20 10:31:12

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Q-seminar

The multiconfiguration methods for atoms and molecules

Mathieu Lewin, Department of Mathematics, Univ. of Copenhagen

Fri Sep 24 2004, 13:15

Abstract

Organized by B. Durhuus

(kuimf / kuimf)

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

A Concentrated Advanced Course followed by a One-Day
Workshop on Non-Linear Time Series Modeling

Non-Linear Time Series Modeling

Mon Sep 27 2004, 09:00 - Fri Oct 1 2004

Abstract

Course: Monday, September 27, 2004 - Thursday, September 30, 2004
Workshop: Friday, October 1, 2004. Speakers only by invitation

The Concentrated Advanced Course and the Workshop will be given
at the Institute of Mathematical Sciences, University of Copenhagen, HC
Ørsted Institute. See the Infomation below how to get to the Institute.
There will be 6 hours of lectures per day, 4 given by Richard A. Davis.
The course is organized by Søren Asmussen (University of Aarhus), Henrik
Hult (University of Copenhagen), Thomas Mikosch (University of Copen-
hagen), and Michael Sørensen (University of Copenhagen)

Organized by

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

ALGEBRA SEMINAR

Associated primes of the local cohomology modules

Siamak Yassemi, professor, Univ. Tehran and IPM

Mon Sep 27 2004, 15:15

Abstract

In this talk we will give some of the ideas we consider important and point out the directions taken by some research on the set of associated primes of local cohomology modules. Also we present our new results on this subject.

Organized by

(kuimf / kuimf)

MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

colloquium

Digressions on posets and shapes

Thomas Britz

Wed Sep 29 2004, 15:15 - 16:00

Abstract

Although partially ordered sets (posets) occur quite frequently, in various settings, we know disproportionately little about these structures. On the other hand, much of this scant knowledge may be expressed as rather elegant theorems. In this talk, I will present a sample of these results and indicate their significant combinatorial value. The talk will also describe several open problems and un-explored avenues in the theory of posets.

Organized by Carsten Thomassen

(dtumat / dtumat)

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Seiberg-Witten invariants of closed 3-manifolds

Michael Bohn University of Köln

Wed Sep 29 2004, 16:15 - 16:15

Abstract

In this talk we give an introduction to Seiberg-Witten theory on 3-manifolds based on the work of Y. Lim [Seiberg-Witten invariants for 3-manifolds in the case $b_1 = 0$ or 1, Pacific J. Math. 195 (2000)] and W. Chen [Casson's invariant and Seiberg-Witten gauge theory, Turkish J. Math. 21 (1997)]. The Seiberg-Witten equations are interpreted as critical point equations of the Chern-Simons-Dirac functional. Viewing the latter as a Morse function, we define the Seiberg-Witten invariant as the Euler characteristic of the configuration space modulo gauge equivalence. We then analyse its behaviour under deformation of the Riemannian metric in order to obtain a topological invariant. For rational homology spheres, this can only be achieved by modifying the Seiberg-Witten invariant by a combination of eta-invariants.

Organized by Jørgen Ellegaard Andersen

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Om indeksteori i anledning af Abelprisen 2004

Bernhelm Booss-Bavnbek (IMFUFA, RUC)

Thu Sep 30 2004, 13:00 - 15:00

Abstract

Abelprisen gik i år til M.F. Atiyah og I.M. Singer for udviklingen af indeksteori. Fra 1962 til midt i 70erne fandt de to i samarbejde en serie af formler for indeks som mål for asymmetri ved 0-egenværdier ved systemer af elliptiske differentialligninger først over kompakte mangfoldigheder uden rand og siden med rand. I mit foredrag vil jeg forklare betydningen af indeksteori til den uindviede, men dannede tilhører, for hvem det måtte forekomme at være et noget partikulært emne. Jeg vil i mit foredrag blandt andet svare på spørgsmålene: Hvad siger disse (indeks)-formler? Hvorfra kom interessen for dem? Og hvorfor er det det måske mest betydningsfulde matematiske resultat i anden halvdel af 1900tallet?

Organized by

(rucimfufa / rucimfufa)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

SEMINAR IN ANALYSIS

Indeterminacy Criteria for the Stieltjes Matrix Moment Problem

Yury Dyukarev, Professor, Kharkov
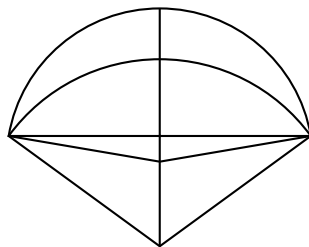
Thu Sep 30 2004, 15:15

Abstract

We obtain criteria for the indeterminacy of the Stieltjes matrix moment problem. We obtain explicit formulas for Stieltjes parameters and study the multiplicative structure of the resolvent matrix. In the indeterminate case, we study the analytic properties of the resolvent matrix of the moment problem. We describe the set of all matrix functions associated with the indeterminate Stieltjes moment problem in terms of linear fractional transformations.

Organized by C. Berg, G. Grubb, J.P. Solovej

(kuimf / kuimf)

DANSK MATEMATISK FORENING
MAT-NYT CALENDAR

This document is a hard copy of all entries in the electronic Mat-Nyt calendar of the Danish Mathematical Society covering the period

2004-10-1 – 2004-11-1.

Produced Thu Jan 5, 2006

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

A Concentrated Advanced Course followed by a One-Day Workshop on Non-Linear Time Series Modeling

Non-Linear Time Series Modeling

Mon Sep 27 2004, 09:00 - Fri Oct 1 2004

Abstract

Course: Monday, September 27, 2004 - Thursday, September 30, 2004 Workshop: Friday, October 1, 2004. Speakers only by invitation

The Concentrated Advanced Course and the Workshop will be given at the Institute of Mathematical Sciences, University of Copenhagen, HC Ørsted Institute. See the Infomation below how to get to the Institute. There will be 6 hours of lectures per day, 4 given by Richard A. Davis. The course is organized by Søren Asmussen (University of Aarhus), Henrik Hult (University of Copenhagen), Thomas Mikosch (University of Copenhagen), and Michael Sørensen (University of Copenhagen)

Organized by

MPS Editor 2004-01-29 11:50:11

(hammer@imf.au.dk / hammer@imf.au.dk)

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MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Operator algebra seminar

On self-absorbing C*-algebras

Wilhelm Winter, Universitaet Muenster

Fri Oct 1 2004, 12:15 - 14:00

Abstract

Organized by Mikael Rørdam

(sduimada / sduimada)

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Workshop

Workshop on Mathematical Physics

J. Schach Møller (Aarhus), G. Nenciu (Bucharest), M. Lewin (Copenhagen), C. Hainzl (Copenhagen)

Fri Oct 1 2004, 13:00 - 13:00

Abstract

Organized by Arne Jensen

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Ph.D. Course

Data Representation in Redundant Systems

Mon Oct 4 2004, 09:00 - Thu Oct 7 2004, 16:00

Abstract

Redundant systems play an important role in the representation of data in many areas of science and technology. For example, the redundancy may be used to achieve a "sparse" representation of data, in the sense that relatively few elements from the system are needed to represent (or approximate) the given data. This is useful for compression, analysis, feature extraction and many other applications. The goal of this PhD course is to present some of the underlying ideas of redundant systems, along with examples of applications.

The PhD course will take place in the Department of Control Engineering at Aalborg University. The course is sponsored by the Danish research framework programme project WAVES (Wavelest in Audio/Visual Electronic Systems).

Organized by Per Christian Hansen, Informatics and Mathematical Modelling, DTU

Lisbeth Grubbe Nielsen 2004-09-08 09:39:53

(dmfeditor / dmfeditor)

5

MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

presentation of master thesis

Kryptoanalyse af symmetriske krypteringssystemer

Charlotte Heinstrup Vikkelsø

Mon Oct 4 2004, 10:00 - 11:00

Abstract

Projektets hovedtema er algebraiske angreb. Disse angreb er baseret på at nøglen for flere vigtige chifre såsom AES, Noekeon og DES kan beskrives ved et stort system af ligninger af lav algebraisk grad over et endeligt legeme. XL-algoritmen er designet til at løse sådanne ligningssystemer. Kompleksiteten af denne gør imidlertid at den ikke er anvendelig på praktiske chifre. XSL-algoritmen prøver at imødekomme kompleksitetsproblemet men det er stadig uvist om den vil virke i praksis. Vi præsenterer en ny fremgangsmåde som for mindre testchifre har vist lovende resultater

Vejleder: Lars Ramkilde Knudsen
Censor: Carsten Dahl

Organized by Lars R. Knudsen

(dtumat / dtumat)

6

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Algebra Seminar

A localization theorem for quantum groups at roots of unity (after E. Backelin and K. Kremnitzer)

Henning Haahr Andersen Aarhus University

Wed Oct 6 2004, 14:15 - 14:15

Abstract

We shall present a version due to Erik Backelin and Kobi Kremnitzer of the localization theorem used in the proofs of various Kazhdan-Lusztig conjectures. The result, namely a derived equivalence between the category of modules for a quantum group and certain $\mathcal{D}$-modules on the quantum flag variety, is similar to recent results by Bezrukavnikov, Mircovic and Rumynin. ¡br /¿ In the talk we will begin with the necessary background on quantum groups and $\mathcal{D}$-modules.

Organized by Henning Haahr Andersen

(auimf / auimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Topology Seminar

Projective hypersurfaces admitting a unipotent group action

Andrew du Plessis Dept. of Mathematical Sciences, AU

Wed Oct 6 2004, 16:15 - 17:15

Abstract

It follows from earlier work of myself and C.T.C. Wall that a projective hypersurface invariant under the action of a non–trivial subgroup of the projective linear group will usually be both "degenerate" and have "degenerate" singularities. Investigation of what "degenerate" means here is of interest in various contexts, and so we have sought to classify all possibilities, at least for hypersurfaces with isolated singularities. The treatment of the unipotent case completes the classification. There turn out to be surprisingly few possibilities.

Organized by Jørgen Ellegaard Andersen

(auimf / auimf)

MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Heldagsseminar om matematik- og fysikdidaktik

Erfaringer og udfordringer ved projektarbejde i relation til matematik og fysik på htx og i det almene gymnasium

Thu Oct 7 2004, 09:30 - 16:00

Abstract

På IMFUFAs jubilæumskonference sidste år, der erstattede heldagssem-
inaret i oktober 2003, var temaet RUC's erfaringer med projektarbejde i
matematik og fysik. I år fokuserer vi så på problemer og udfordringer ved
projektarbejde på det gymnasiale niveau.

Oplægsholderne er blevet bedt om at fortælle om deres erfaringer fra
konkrete forløb med projektarbejde i det almene gymnasium og/eller htx.

Organized by Karin Beyer (beyer@ruc.dk) og Morten Blomhøj (blomhoej@ruc.dk).

(rucimfufa / rucimfufa)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Statistics Seminar

CARMA and FICARMA Processes

Tina Marquardt TU München

Thu Oct 7 2004, 14:15 - 14:15

Abstract

The definition and properties of ARMA processes are reviewed. Since discrete-time series are often obtained by observing a continuous-time process at a discrete sequence of observation times, it is natural to model the underlying process as a continuous-time series. For this reason continuous-time ARMA (CARMA) models are introduced, which involve autocorrelation functions that show an exponential decrease over time. Hence, ARMA and CARMA processes belong to the family of short memory models. However, several measurements in hydrology, turbulence, finance, economics or telecommunications show long memory behaviour in the sense that they seem to require models, whose autocorrelation functions decay much less quickly. ¡br¿ In this talk the fractionally integrated CARMA (FICARMA) models will be introduced, which give a class of long memory stationary processes whose autocorrelation functions converge to zero at asymptotically hyperbolic rates depending on the order of fractional integration.

Organized by Ole Eiler Barndorff Nielsen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Analysis Seminar

On translation invariant models of non-relativistic QED

Jacob Schach Møller Dept. of Mathematical Sciences, AU

Thu Oct 7 2004, 16:15 - 17:15

Abstract

We give an introduction to a type of non-relativistic models from quantum field theory which have been extensively studied during the last 15 years. The models consist of a small quantum system which is coupled to a second quantized radiation field. Focus will be given to models which are translation invariant, i.e. the Hamiltonian commutes with the operator of total momentum.

Organized by Bent Ørsted

(auimf / auimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Seminar

Bayesian nonparametric inference on the hazard rate function

Luca La Rocca, University of Modena and Reggio Emilia, Italy

Fri Oct 8 2004, 14:00

Abstract

Bayesian nonparametric inference combines the scope of the nonparametric point of view with the mathematical elegance of the Bayesian approach. The upsurge of simulation methods has made possible to deal with absolutely continuous unknown distributions and this is shown in the talk for the special case of positive variables. In particular, a class of nonparametric prior distributions recently introduced by the speaker in his Ph.D. thesis is considered.

Organized by Claus Dethlefsen

Lisbeth Grubbe Nieslen 2004-09-07 10:23:51

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

Estimation in the positive stable shared frailty Cox proportional hazards model.

Christian Pipper, Department of Epidemiology Research, University of Copenhagen

Fri Oct 8 2004, 14:15

Abstract

We begin the talk with a brief introduction to the positive stable shared frailty Cox proportional hazards model in which we discuss the uses of this model and some problems concerning inference. Next, we consider the asymptotic properties of an approximate profile likelihood based estimation procedure. In particular, we shall focus on the asymptotic normality of the estimators and provide a proof of this feature based on the concept of asymptotic equicontinuity. This is joint work with Torben Martinussen.

Organized by Anders Rahbek

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

Ph.D. DEFENSE

Indeterminate moment problems within the Askey-scheme

Jacob S. Christiansen

Fri Oct 8 2004, 15:15

Abstract

The evaluation committee consists of Henrik Schlichtkrull (MA,chairman),
Erik Koelink (Delft), Henrik L. Pedersen (KVL).
Ph.d. advisor: Christian Berg

Organized by

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG
AALBORG UNIVERSITET

Conference

8th Nordic Combinatorial Conference

Wed Oct 20 2004, 12:00 - Fri Oct 22 2004, 17:00

Abstract

The program will consist of contributed talks in different areas of combinatorics – please look at the programme (pdf-file) on the URLaddress http://www.math.aau.dk/norcom/program.pdf

Friday there will be a lecture by Andries Brouwer, Technical University of Eindhoven. Professor Brouwer will be in town to be given an honorary degree by Aalborg University on the Saturday after the meeting.

The Thursday morning session will close with a lecture by Ivan Damgaard, Århus University. Professor Damgaard is a co-founder and owner of the renowned data security firm Cryptomathic.

Organized by Lars Døvling Andersen and Olav Geil

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Toppen af Isbjerget

Poul G. Hjorth (Institut for Matematik, DTU)

Thu Oct 21 2004, 13:00 - 15:00

Abstract

Vi ser på isbjerges dynamiske opførsel. Specielt undersøger vi 'omrulninger' eller 'kæntringer' som er observeret for isbjerge der flyder på havet. Man mener at omrulningerne skyldes at havet smelter isbjerget nedefra og forårsager en ændring med tiden af isbjergets masse og massefordeling. Vi modellerer udviklingen af ligevægtspositionerne for et homogent legeme som flyder i en ideal væske når dette legeme udsættes for 'smeltning', dvs. en langsom fjernelse af den del af legemet der er under væskeoverfladen. Vi viser at nogen information om den af smeltningen frembragte udvikling af stabiliteten kan fås fra geometrien af den del af legemet som er over væskefladen. Med M. Deryabin, Moskva.

Organized by

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Q-seminar

Modules over Deformation Quantisation Algebras

Ryszard Nest, Dept. of Mathematics, Univ. of Copenhagen

Fri Oct 22 2004, 13:15

Abstract

Organized by B. Durhuus

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Ph. D. forsvar

The non-microstate free entropy dimension of DT operators

Lars Aagaard

Tue Oct 26 2004, 15:15

Abstract

Organized by Mikael Rørdam

(sduimada / sduimada)

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MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

colloquium

Is a mathematical theory of cryptography possible?

James L. Massey

Wed Oct 27 2004, 15:15 - 16:00

Abstract

The question addressed is whether a "mathematical theory of cryptography", akin to Shannon's celebrated "mathematical theory of communication", is possible and, if so, how far we are along the path to such a theory. We argue that the essential first step is to formulate a mathematical model of a cryptographic system with precise definitions and axioms from which theorems can be proved. We argue also that for such a theory to have practical impact there must be widespread agreement that the model adequately describes real-world cryptographic systems and scenarios. Numerous examples will be used and will lead to the pessimistic conclusion that we are very far from possessing a satisfactory "mathematical theory of cryptography". Some suggestions toward reaching such a theory will be given.

Organized by Lars R. Knudsen

(dtumat / dtumat)

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MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Contact Dehn surgery, symplectic fillings, and property P for knots

Hansjörg Geiges University of Köln

Wed Oct 27 2004, 16:15 - 16:15

Abstract

Property P for knots is concerned with the question of constructing counterexamples to the Poincaré conjecture by surgery on the 3-sphere along a single knot. The talk reviews the recent work by Kronheimer on Mrowka on this question, with special emphasis on the role played by contact geometry.

Organized by Jørgen Ellegaard Andersen

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Analysis Seminar

Stability for inverse resonance problem

Evgeni Korotyaev Humboldt-Universität zu Berlin

Thu Oct 28 2004, 16:15 - 17:15

Abstract

For the Schrödinger operator on the half line with real compactly supported potential we show that: Assume that we perturb a sequence of resonances and eigenvalues by a sequence from some Hilbert space. Then the new sequence is the sequence of zeroes of the Jost function for some unique real compactly supported potential, i.,e., it is a sequence of resonances and eigenvalues for this new potential. Moreover, we show that the measure associated with the zeros of the Jost function is a Carleson measure. Using this fact we obtain a priori estimates of resonances in terms of the Jost function. This result will be published in Int. Math. Res. Notice

Organized by Erik Skibsted

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

INSTITUT FOR MATEMATIK OG DATALOGI

SYDDANSK UNIVERSITET, ODENSE UNIVERSITET

Operator algebra seminar

On a method of constructing hyperinvariant subspaces

Ken Dykema, Texas A & M University

Fri Oct 29 2004, 12:15 - 14:00

Abstract

We'll focus on a recent method of Foias, Jung, Ko and Pearcy and a modification of it which permits contruction of hyperinvariant subspaces for some quasi-nilpotent operators in a II_1 factor.

Organized by Mikael Rørdam

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Q-seminar

Harmonic analysis on the Sklyanin algebra

### Hjalmar Rosengren, Chalmers, G?teborg

Fri Oct 29 2004, 13:15

Abstract

This talk will be a progress report on recent work linking representation theory of elliptic quantum groups with elliptic hypergeometric series. The starting point for our approach is given by certain natural bases in a space of theta functions. These bases are related to the vertex-IRF transformation for the 8-vertex model and solve a generalized eigenvalue problem in a Sklyanin algebra representation. The transition coefficients between different such bases are given by (analytically continued) elliptic 6j-symbols. As an application, we can prove Sklyanin's 1983 conjecture concerning Sklyanin algebra invariant integration on the torus.

Organized by B. Durhuus
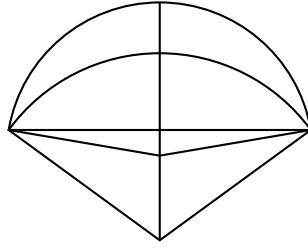
(kuimf / kuimf)

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DANSK MATEMATISK FORENING
MAT-NYT CALENDAR

This document is a hard copy of all entries in the electronic Mat-Nyt calendar of the Danish Mathematical Society covering the period

2004-11-1 – 2004-12-1.

Produced Thu Jan 5, 2006

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Ribbon categories from Homfly skein theory

Christian Blanchet Université de Bretagne-Sud, France

Tue Nov 2 2004, 09:15 - 12:00

Abstract

The Homfly invariant of a link is a two variable polynomial with specializations corresponding to the so called SU(N) quantum invariant. We will present the corresponding skein theory, and construct a semisimple ribbon category out of it. The key point here is the structure of Hecke algebras. This lecture is part of the course "TQFT and Knot theory".

Organized by Jørgen Ellegaard Andersen

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Talk

Matematik i det nye gymnasium

Bjørn Grøn (Fagkonsulent i matematik), Ove Poulsen (rektor og fm. for gymnasierådet), Erik M. Schmid

Tue Nov 2 2004, 13:15 - 14:30

Abstract

- Fagkonsulent i matematik, Bjørn Grøn (Abstrakt)
- Fm. for gymnasierådet, rektor Ove Poulsen (Abstrakt)
- Dekan, Erik M. Schmidt
- Medlem af læseplansgruppen for HHX, Tage Bai Andersen.

Abstrakter

Fagkonsulent i matematik, Bjørn Grøn:

Matematik efter gymnasiereformen

Da valggymnasiet afløste grengymnasiet i slutningen af 80'erne, skete der en dramatisk forøgelse i andelen af studenter med matematik på højeste niveau: Fra under 1/3 af de matematiske studenter før til over 75% efter reformen. Alligevel beskrives den udvikling ofte som en sænkning af det faglige niveau.

Hvordan måler man det faglige niveau?

Et af den nuværende regerings udtalte mål med den kommende gymnasiereform er at styrke det faglige niveau i almindelighed og styrke de matematisk-naturvidenskabelige fag i særdeleshed. Som konsekvens heraf nytænkes hele den almendannende side ved gymnasieundervisningen. Og samtidig afløses sproglig og matematisk linje af studieretninger, indenfor hvilke fagene skal samarbejde.

Dette har vidtgående konsekvenser for arkitekturen i læreplanerne. Et A-niveau i matematik har en for hele landet fælles målbeskrivelse af, hvad eleverne skal kunne. De faglige mål udmøntes i et kernestof, der er fælles gods for alle, og et supplerende stof, der vil variere betydeligt i emnevalg fra studieretning til studieretning. Kan der formuleres succeskriterier for reformen? Er det supplerende stof irrelevant for aftagerne?

I læreplansgrupperne i matematik arbejdede vi efter følgende ledetråd: Vi ønsker et gymnasium, hvor eleverne møder de matematisk-naturvidenskabelige fag på en sådan måde, at det giver dem lyst til at læse disse fag, og som samtidig giver studenterne et solidt fagligt grundlag for at studere videre. Når vi formulerer opgaven på den måde kalder det næsten på en sådan

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kombination af kernestof og supplerende stof. Og når de faglige mål skal opgives i deres helhed til eksamen, og en betydelig del af disse faglige mål udmøntes gennem det supplerende stof—så må det supplerende stof også være relevant for aftagerne.

Fm for gymnasierådet, rektor Ove Poulsen

Den nye gymnasiereform tager stilling til Science-for-all vs. - Science-for-the few. Reformen forholder sig til balancen mellem disse to begreber idet den naturvidenskabelige dannelse vil blive styrket og bedre integreret i et fælles alment dannelsesbegreb. Derigennem tager reformen indirekte stilling til naturvidenskabelige spidskompetencer i Ungdomsuddannelserne, idet disse nu mere er overladt til markedskræfter. Spørgsmålet er, om der vil blive uddannet flere eller færre unge med en naturvidenskabelig spidskompetence i det nye gymnasium?

Der tegner sig et broget geografisk mønster med stærke naturvidenskabelige studie-retningspakker i dele af landet, medens der i andre dele af landet er en bekymrende svækkelse af de naturvidenskabelige fagpakker.

Organized by Johan P. Hansen

(auimf / auimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Talk

The Interaction of Geometry and Physics: an Overview.

Professor and Abel Prize Winner 2004, M. Atiyah

Tue Nov 2 2004, 14:30 - 14:30

Abstract

Organized by Johan P. Hansen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Talk

On the Atiyah-Patodi-Singer problem

Professor G. Grubb University of Copenhagen

Tue Nov 2 2004, 15:30 - 16:15

Abstract

In 1975, Atiyah, Patodi and Singer initiated the study of the index of spectral boundary problems (defined by pseudodifferential projections) for first-order elliptic differential operators of Dirac type on compact manifolds with boundary, introducing in particular a nonlocal invariant known as the eta invariant. This has led to a wealth of further studies and extensions. We shall try to give an overview of some of the recent progress, mainly from an analysis point of view.

Organized by Johan P. Hansen

(auimf / auimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Talk

Geometry of the Maslov index

Professor Bent Ørsted Dept. of Mathematical Sciences, AU

Tue Nov 2 2004, 16:15 - 17:00

Abstract

The Maslov index plays a key role in connection with the geometric asymptotics of solutions to partial differential equations. It also appears naturally in the representation theory of the symplectic group, and in gluing formulas for certain elliptic boundary value problems.

In this lecture we shall give some new properties of the Maslov index, and at the same time generalize it, in both finite and infinite dimension; in particular we relate it to the theory of bounded cohomology of groups.

Organized by Johan P. Hansen

Maiken Kirdorf Nielsen 2004-09-24 13:51:52

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Monotone trace functions of several variables

Frank Hansen, K?benhavns Universitet

Wed Nov 3 2004, 15:15

Abstract

We investigate monotone functions of several variables under a trace or a trace-like functional. In particular, we prove the inequality $\tau(x_1 \cdots x_n) \leq \tau(y_1 \cdots y_n)$ for a trace τ on a C*-algebra and abelian n-tuples $(x_1, ..., x_n) \leq (y_1, ..., y_n)$ of positive elements. We formulate and prove Jensen's inequality for expectation values, and we study monotone and convex matrix functions of several variables with respect to the weak ordering of matrices.

Organized by NJL

(kuimf / kuimf)

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

A spin decomposition of the Verlinde formulas for type A modular categories

Christian Blanchet Université de Bretagne-Sud, France

Wed Nov 3 2004, 16:15 - 17:15

Abstract

A modular category is a braided category with some additional algebraic features. The interest of this concept is that it provides a Topological Quantum Field Theory in dimension 3. The Verlinde formulas associated with a modular category are the dimension of the TQFT modules. We discuss reductions and refinements of these formulas for modular categories related with SU(N). Our main result is a splitting of the Verlinde formula, corresponding to a brick decomposition of the TQFT modules whose summands are indexed by spin structures modulo an even integer. We introduce the notion of a spin modular category, and state the decomposition theorem in this general context.

Organized by MaPhySto

MAT-NYT

The Danish National Research Foundation Network in Mathematical Physics and Stochastics

Geometric Mathematical Physics Seminar

Construction of modular categories from Homfly skein theory

Christian Blanchet Unversité de Bretagne-Sud, France

Thu Nov 4 2004, 09:15 - 12:00

Abstract

We will construct modular categories from SU(N) specializations of Homfly skein theory at roots of unity, and compute the corresponding Verlinde formula.

This lecture is part of the course "TQFT and Knot theory".

Organized by MaPhySto

(hammer@imf.au.dk / hammer@imf.au.dk)

MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Anvendelsen af sfærisk harmoniske funktioner i numeriske vejrprognose- og klimamodeller

Bennert Machenhauer (Danmarks Meteorologiske Institut)

Thu Nov 4 2004, 13:00 - 15:00

Abstract

Allerede i 1904 konstruerede Nordmanden Wilhelm Bjerknes en vejr-model baseret på 4 klassiske naturlove. Bjerknes måtte imidlertid konstatere at systemet ikke generelt kan løses analytisk. Det var først med fremkomsten af computeren og numeriske løsnings metoder samt udbygningen af det verdensomspændende net af meteorologiske målestationer, at forudsigelse af vejret blev muligt. I den første operationelle numeriske prognose, beregnet i 1954 i Sverige, benyttede man et stærkt simplificeret ligningssystem bestående af blot en enkelt ligning med én variabel. Ved anvendelsen af denne ligning fik man fra 1954 relativt gode 24 timers prognoser af strømningen i ca. 5 km's højde, af umiddelbar værdi for især flyvningen. Denne relative succes var opmuntrende for en udvikling i de kommende årtier, som, i takt med at stadig kraftigere computere blev stillet til rådighed, førte til at prognoserne udstraktes til at inkludere hele den globale atmosfære og blev baseret på mindre og mindre simplificerede ligningssystemer. Denne udvikling blev muliggjort og/eller fremmet ved en samtidig udvikling af nye numeriske metoder. Jeg vil illustrere et sådant udviklingsstep: Den overgang som verden over skete fra såkaldte gitterpunktsmodeller til såkaldte spektralmodeller i 1980erne og som vi på Københavns Universitets Institut for Teoretisk Meteorologi lagde grunden til 10-15 år tidligere.

Organized by

(rucimfufa / rucimfufa)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Q-seminar

Follytons

Jens Hoppe, KTH, Stockholm

Fri Nov 5 2004, 13:15

Abstract

A non-linear functional $Q[u,v]$ is given that governs the loss, respectively gain, of (doubly degenerate) eigenvalues of fourth order differential operators $L = \partial^4 + \partial\,u\,\partial + v$ on the line. Apart from factorizing L as $A^*A + E_0$, providing several explicit examples, and deriving various relations between u, v and eigenfunctions of L, we find u and v such that L is isospectral to the free operator $L_0 = \partial^4$ up to one (multiplicity 2) eigenvalue $E_0 < 0$. Not unexpectedly, this choice of u, v leads to exact solutions of the corresponding time-dependent PDE's. Removal of eigenvalues allows us to obtain a sharp Lieb-Thirring inequality for a class of operators L whose negative eigenvalues are of multiplicity two.

Organized by B. Durhuus

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Algebra Seminar

Actions of parabolic groups

Simon M. Goodwin University of Aarhus

Wed Nov 10 2004, 14:15 - 14:15

Abstract

Let G be a reductive linear algebraic group over an algebraically closed field. Let P be a parabolic subgroup of G, P_u the unipotent radical of P and $\mathfrak{p}_u$ the Lie algebra of P_u. Then P acts on $\mathfrak{p}_u$ via the adjoint action and this induces an action of P on higher terms $\mathfrak{p}_u^{(l)}$ of the descending central series of $\mathfrak{p}_u$. In this situation invariant theory asks two natural questions:

When does P act on $\mathfrak{p}_u^{(l)}$ with a finite number of orbits?

When is $\mathfrak{p}_u^{(l)}$ a prehomogeneous space for P?

Organized by Henning Haahr Andersen

(auimf / auimf)

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MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

colloquium

Cell Motility as Persistent Random Walks - An inverse stochastic problem

Henrik Flyvbjerg

Wed Nov 10 2004, 15:15 - 16:00

Abstract

Got: Lots of motility data for crawling cells.
Wanted: Stochastic differential equation that captures data's nature.
How to get it: Is what seminar is about.
Some open ends (to the speaker, anyway) are pointet out regarding the "inverse problem," the determination of an underlying stochastic differential equation from experimentally recorded trajectories.

Organized by Steen Markvorsen

(dtumat / dtumat)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Banach algebras on Stone-Cech compactifications of semigroups

Prof H Garth Dales, University of Leeds, England

Wed Nov 10 2004, 15:15

Abstract

Let S be a semigroup (this includes the case where S is a group). We consider the Banach algebra $l^1(S)$ and, especially, its second dual, which can be identified with a Banach algebra $M(\beta S)$ on the Stone-Cech compactification βS of S.

We combine techniques from Banach algebra theory with the study of βS to try to resolve some questions about $M(\beta S)$. We succeed in determining when this algebra is amenable and weakly amenable, and in determining its centre, but fail to determine its radical.

Organized by NJL

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Om naturfilosofien 1100-1250

Aksel Haaning (Institut for psykologi og filosofi/videnskabsteori, RUC)

Thu Nov 11 2004, 13:00 - 15:00

Abstract

Med udgangspunkt i *Middelalderens naturfilosofi* (2004) og i polemik mod den almindelige antagelse, at naturvidenskabens gennembrud foregår i det 17.århundrede, vil jeg forsøge at redegøre for bestræbelserne på at skabe en *philosophia naturalis* eller en *scientia naturalis* (naturfilosofi / naturvidenskab) i det 12. århundrede. Disse bestræbelser vokser så at sige ud af teologi, og er samtidig forbundet teologi - og religion. Samtidig vil jeg forsøge at sige noget vedkommende om forholdet mellem filosofi og videnskab som det diskuteres i dag - også blandt teologer, og hvor alle, uanset faglig eller akademisk baggrund, principielt kan og bør deltage.

Organized by

(rucimfufa / rucimfufa)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Analysis Seminar

Functional equations on groups

Henrik Stetkær Dept. of Mathematics, AU

Thu Nov 11 2004, 16:15 - 17:15

Abstract

To solve a functional equation means (like for a differential equation) to find the functions satisfying it. To take an example, consider d'Alembert's equation

$$f(x + y) + f(x - y) = 2f(x)f(y), \quad x, y$$

real numbers.

It can be shown that its continuous non-zero solutions f are $f(x) = \cos(sx)$, where the parameter s ranges over the complex numbers. That is why the equation is also called the cosine equation. Replacing the group of reals by an arbitrary group G we encounter generalizations like Wilson's functional equation

$$f(xy) + f(xy^{-1}) = 2f(x)g(y), \quad x, y \in G,$$

where f and g are two unknown functions to be determined.

More complicated functional equations occur naturally in the theory of harmonic analysis.

We will discuss equations like the ones above on groups, in particular on non-abelian groups, where little is known in general about the solutions.

Organized by Bent Ørsted

(auimf / auimf)

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MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

ICME-10 som ud- og indkigspost til matematikkens didaktik

Mogens Niss (IMFUFA, RUC)

Thu Nov 18 2004, 13:00 - 15:00

Abstract

The 10th International Congress on Mathematical Education afholdtes 4-11 juli 2004 på DTU med seminarholderen som formand for den internationale videnskabelige programkomité. ICME-10 kan anskues både som en udkigspost og en indkigspost til matematikkens didaktik. Udkigspost, fordi en sådan kongres med ca. 2400 deltagere fra ca. 110 lande tilbyder matematikdidaktikere af enhver slags en lejlighed til at se hvordan det samlede matematikdidaktiske landskab tager sig ud for tiden. Erfarne folk på feltet kan tillige få et indtryk at hvordan landskabet ændrer sig over tid. Indkigspost, fordi kongressen og dens output også er et tilbud til interesserede udenforstående om at få et inblik i hvad der rører sig på feltet. Seminaret vil give et personligt bud på hvad man har kunnet få øje på ved at anlægge disse synsvinkler.

Organized by

(rucimfufa / rucimfufa)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Q-seminar

Noncommutative plane curves and spheres

S?ren J?ndrup, Department of Mathematics, Copenhagen University

Fri Nov 19 2004, 13:15

Abstract

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

Perfect and approximate simulation for Hawkes processes

Jesper M?ller , Department of Mathematical Sciences, Aalborg University.

Fri Nov 19 2004, 14:15

Abstract

Hawkes processes are Poisson cluster processes with certain branching and self-similarity properties. Such processes play a fundamental role for point process theory and its applications. Particularly, marked Hawkes processes have important applications in seismology, neurophysiology and finance. We discuss how to make perfect and approximate simulations of (unmarked and marked) Hawkes processes. Extensions to spatial Hawkes processes will be briefly mentioned.

Organized by Anders Rahbek

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Workshop

Workshop on Variance Estimation in Stereology

Mon Nov 22 2004, 00:00 - Fri Nov 26 2004, 00:00

Abstract

Organized by The T.N. Thiele Centre

Oddbjørg Wethelund 2004-11-17 12:30:57

(auimf / auimf)

MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

seminar

Kryptologi i praksis

Repræsentanter fra danske virksomheder samt Videnskabsministeriet

Tue Nov 23 2004, 08:30 - 12:00

Abstract

Institut for Matematik inviterer til seminar den
23. november 2004 fra 08.30 til 12.00 Auditorium 41, bygning 303,
DTU

Kom og hør hvordan nogle danske virksomheder bruger kryptologi i
praksis, og hør også hvorfor Videnskabsministeriets nye digitale signatur
til det danske folk ikke er taget i brug af danske banker. Alle er velkomne.
Se program her: http://www.mat.dtu.dk/people/Lars.R.Knudsen/praksis2004.html

Organized by Lars R. Knudsen

(dtumat / dtumat)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Algebra Seminar

Vanishing behaviour of cohomology of quantum groups

Tarik Rian Aarhus Universitet

Wed Nov 24 2004, 14:15 - 15:15

Abstract

Let U_q be the quantum group associated to some Cartan matrix over a field k. Let χ_λ be a character of the Borel subalgebra B_q and k_λ the one-dimensional B_q-module determined by χ_λ.

The vanishing behaviour of $H_q^i(k_\lambda)$ depends on whether q is a root of unity or not. We shall discuss both cases and prove the following result (analogous to the case of the corresponding algbebraic group over a field of prime characteristic): If q is a primitive root of unity with l odd, then for any integrable U_1-module, we have that $H_1^i(M)^{(1)} \otimes St_l$ and $H_q^i(M^{(1)} \otimes (l-1)\rho)$ are isomorphic as U_q -modules. Here $M^{(1)}$ denotes the Frobenius twist of M, ρ is the sum of the fundamental dominant weights and St_l is the Steinberg module. This result implies an interesting nonvanishing theorem.

We shall also sketch a proof in the case of an arbitrary l.

Organized by Henning Haahr Andersen

(auimf / auimf)

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MAT-NYT

MATEMATISK INSTITUT

DANMARKS TEKNISKE UNIVERSITET

colloquium

Canonical extensions of partially ordered algebras

Mai Gehrke

Wed Nov 24 2004, 15:15 - 16:00

Abstract

Partially ordered algebras of various kinds are algebraic counterparts of formal deductive systems that model computation or reasoning in computer science, artificial intelligence, and many other areas of formal information processing. Canonical extensions provide a uniform representation theory and thereby give relational semantics for the corresponding logics. In this talk we give an introduction to the general area, its problems, and some solutions.

Professor Gehrke is currently visiting University of Copenhagen.

Organized by Bodil Branner

(dtumat / dtumat)

MAT-NYT

INSTITUT FOR STUDIET AF MATEMATIK OG FYSIK

SAMT DERES FUNKTIONER I UNDERVISNING, FORSKNING OG ANVENDELSER (IMFUFA)

ROSKILDE UNIVERSITETSCENTER

Institutseminar

Matematiske modeller til analyser af børsmarkedet

Kim Mortensen (Senior Markedsanalytiker, Københavns Fondsbørs)

Thu Nov 25 2004, 13:00 - 15:00

Abstract

Jeg arbejder med Market microstructure analyser af danske og internationale børser. Fokus i dette arbejde er håndteringen og analyser af transaktionsdata fra en ordre indlægges i handelssystemet til denne resulterer i en handel på aktie-, obligations- eller derivatmarkedet. Data er højfrekvente og tidsmæssigt irregulære fordelt. I mit foredrag vil jeg efter en kort præsentation af Københavns Fondsbørs beskrive hvordan anvendt matematik bruges til løsning af konkrete finansielle problemstilling og give eksempler på anvendelsen heraf i relation til arbejdet med højfrekvente transaktionsdata.

Organized by

(rucimfufa / rucimfufa)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Analysis Seminar

The Bargmann transform and generalizations

Salem Ben Said Dept. of Mathematical Sciences, AU

Thu Nov 25 2004, 16:15 - 16:15

Abstract

The Segal-Bargmann transform for $\mathbb{R}^N$ (also called the coherent state transform) is a standard and important tool in harmonic analysis and mathematical physics. The remarkable fact about this transform, denoted by $\mathscr{B}$, is that $\mathscr{B}$ is the intertwining operator between the Schrödinger model of the canonical commutation relations, in which the position and momentum operators are represented by x_j and $i^{-1}\partial/\partial x_j$, and the Fock model, in which the creation and annihilation operators are represented by z_j and $\partial/\partial z_j$. Further, $\mathscr{B}$ is given by $\mathscr{B}f(z) = \langle f, \mathbb{B}_z \rangle$, where the kernel $\mathbb{B}_z(x) = (2\pi)^{-N/4} e^{[-2\|x-z\|^2 + \|x\|^2]/4}$, and it is a unitary map from $L^2(\mathbb{R}^N)$ to the Fock space $F(\mathbb{C}^N)$ of holomorphic functions that are square integrable with respect to the Gaussian measure $\pi^{-N} e^{-\|z\|} dz$.

In this talk we present a generalization of the Segal-Bargmann transform, where the usual theory of differentiation is replaced by the theory of Dunkl differential-difference operators. The generalized transform allows to exhibit some relationships between the Dunkl theory in the Schrödinger model and in the Fock model. An application to the Calogero-Moser system will also be given.

Organized by Bent Ørsted

(auimf / auimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Q-seminar

Relativistic models for electrons near heavy nuclei

Prof. Eric Sere, Paris Dauphine

Fri Nov 26 2004, 13:15

Abstract

Organized by B. Durhuus

(kuimf / kuimf)

MAT-NYT

Theory Department, IT University of Copenhagen

Theory Seminar

SafeDpi: a language for controlling mobile code

Matthew Hennessy

Mon Nov 29 2004, 13:15 - 14:45

Abstract

SafeDpi is a distributed version of the picalculus, in which processes are located at dynamically created sites. Parametrised code may be sent between sites using so-called ports, which are essentially higher-order versions of picalculus communication channels. A host location may protect itself by only accepting code which conforms to a given type associated to the incoming port. We define a sophisticated static type system for these ports, which restrict the capabilities and access rights of any processes launched by incoming code. Dependent and existential types are used to add flexibility, allowing the behaviour of these launched processes, encoded as process types, to depend on the host's instantiation of the incoming code. We also show that a natural contextually defined behavioural equivalence can be characterised coinductively, using bisimulations based on typed actions. The characterisation is based on the idea of knowledge acquisition by a testing environment and makes explicit some of the subtleties of determining equivalence in this language of highly constrained distributed code.

Organized by Department of Theoretical Computer Science

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MAT-NYT

Theory Department, IT University of Copenhagen

Conference

Context-aware Computing

Michael Beigl, Dan Chalmers, Paul Dourish, Hans Gellersen, Matthew Hennessy, Albrecht Schmidt,

Tue Nov 30 2004, 09:00 - 17:30

Abstract

The conference will focus on the field of context-aware computing by the presentations of six international research workers. Each presentation will be rooted in the speaker's research in the particular field of context-aware computing. Among other things the conference will present social and technical aspects of context-aware computing, the interaction with such systems, and models of context-aware computing. The presentations will be academically in its form but will appeal widely to research workers, graduate students and people with an interest in this field.

Organized by Crossroads Copenhagen

(jd@itu.dk / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Lecture

Fluid Flows and Mineral Deposition

Professor John Donaldson, KAIST, Taejeon, Korea, University Of Tasmania, Australia, University of Aarhus

Tue Nov 30 2004, 11:15

Abstract

There is considerable evidence indicating that deposition of minerals occurs at sites of upwelling of fluid flows in the earth's upper layers. These flows are driven hydrothermally in the porous crust of the earth by the hot magma core. In several areas of the world, there appear to be patterns associated with the locations of the deposits. The geological background is examined with specific reference to known mineral deposits in Australia and Japan. The work of Lapwood in developing a mathematicalmodel for such flows is described. The resulting patterns suggest an application to the prediction of sites of mineral deposits. In particular an examination is made of possible patterns leading to the known gold deposits in the large cretan basin of Western Australia.

Organized by Dekan Henrik Jeppesen

KUIMF Editor 2004-11-18 14:58:16

(kuimf / kuimf)
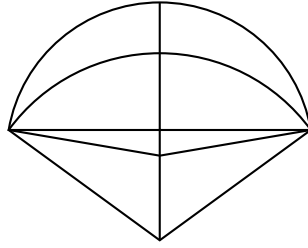
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DANSK MATEMATISK FORENING
MAT-NYT CALENDAR

This document is a hard copy of all entries in the electronic Mat-Nyt calendar of the Danish Mathematical Society covering the period

2004-12-1 – 2005-1-1.

Produced Thu Jan 5, 2006

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

OPERATOR ALGEBRA SEMINAR

Bounded Hochschild cohomology of Banach algebras of matrices

Niels Grønbæk, Københavns Universitet

Wed Dec 1 2004, 15:15

Abstract

For a Banach algebra A we consider the bounded Hochschild cohomology $H_n(A, A*)$, $n = 0, 1, \ldots$. We shall prove that if A has a suitable matrix-like structure, then these cohomology groups vanish. The prototypical Banach algebra for this to happen is $A(l_p(Y))$, the approximable operators on a vector-valued sequence space, for which we thus gain insight, "externally" such as 'the bounded cyclic cohomolgy is periodic', and "internally" in terms of factorization properties of compact operators.

Our approach is to use basic algebraic homological tools and extend the results by continuity.

Organized by NJL

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Topology Seminar

On the cobordism category of surfaces

Nathalie Wahl Aarhus

Wed Dec 1 2004, 16:15 - 17:15

Abstract

Organized by Ib Madsen

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

Random surfaces and labelled trees

Professor Philippe Chassaing, Universite Henri Poincare, Nancy

Fri Dec 3 2004, 13:15

Abstract

We shall describe a bijection, due to Schaeffer,between random quadrangulations and labelled treesand we shall explain different kinds of convergences of random surfaces that result from this bijection.

Organized by Anders Rahbek

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Seminar

The structure of dominating subgraphs

Zsolt Tuza, Hungarian Academy of Sciences

Fri Dec 3 2004, 14:00

Abstract

A dominating set in a graph is a vertex subset S such that every vertex not in S has at least one neighbour in S.

We study the possible structures of subgraphs induced by dominating sets. A long-standing open problem in this area can be formulated as follows:

Given a class D of connected graphs, characterize those graphs G in which every connected, induced subgraph contains a dominating, induced subgraph isomorphic to some member of D.

In the talk we present a complete solution, a "forbidden induced subgraph" characterization for every class D.

Part of the results is joint with G. Bacso.

The seminar is aimed at everybody with an interest in mathematics. The purpose of this kind of talk is to pass on your enthusiasm to the audience, to promote mathematics and the chosen topic as interesting and relevant.

Organized by Lars Døvling Andersen

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Algebra Seminar

Projective and injective modules for q-Schur algebras

Dr Maud De Visscher QMC, University of London

Wed Dec 8 2004, 14:15 - 15:15

Abstract

This is a report on joint work with Stephen Donkin. Our problem is to describe the modules for the q-Schur algebras $S_q(n,r)$ over a field k which are both projective and injective. We make a simple conjecture which would give the labelling of such modules in general. We then reduce it to the case where the field k has characteristic zero and prove it for $n = 2, 3$.

Organized by Henning Haahr Andersen

(auimf / auimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Topology Seminar

Topological Hochschild Homology of Thom Spectra

Christian Schlichtkrull Oslo

Wed Dec 8 2004, 16:15 - 17:15

Abstract

Organized by Ib Madsen

Maiken Kirdorf Nielsen 2004-11-25 14:35:15

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Analysis Seminar

On the mathematical aspects of quasi-particles in solid state physics

Horia Cornean Aalborg University

Thu Dec 9 2004, 16:15 - 17:15

Abstract

Consider a many-body fermionic Hamiltonian defined with periodic boundary conditions on a two dimensional torus (which models a very long and thin cylinder, i.e. a straight nanotube). We will study the low lying spectrum of this operator, and show that in the Hartree-Fock approximation one can obtain effective one-particle models describing these particular states. Finally, we will show how these excited states (excitons, trions, etc) influence the optical absorbtion of a given material. We stress that the main purpose of this talk is to formulate clear mathematical problems related to PDEs, unbounded linear self-adjoint operators, and integral equations.

Organized by Bent Ørsted

(auimf / auimf)

MAT-NYT

Theory Department, IT University of Copenhagen

Theory Seminar

R-Trees: general-purpose data structures for geometric objects

Herman Haverkort

Fri Dec 10 2004, 13:00 - 14:00

Abstract

The query efficiency of a data structure that stores a set of objects, can normally be assessed by analysing the number of objects, pointers etc. looked at when answering a query. However, if the data structure is too big to fit in main memory, data may need to be fetched from disk. In that case, the query efficiency is easily dominated by moving the disk head to the correct locations, rather than by reading the data itself. To reduce the number of disk accesses, once can group the data into blocks, and strive to bound the number of different blocks accessed rather than the number of individual data objects read. An R-tree is a general-purpose data structure that stores a hierarchical grouping of geometric objects into blocks. Many heuristics have been designed to determine which objects should be grouped together, but none of these heuristics could give a guarantee on the resulting worst-case query time. Recently we developed the Priority R-tree, or PR-tree, which is the first R-tree variant that always answers a window query by accessing $O((N/B)^{1-1/d} + T/B)$ blocks, where N is the number of d-dimensional objects stored, B is the number of objects per block, and T is the number of objects whose bounding boxes intersect the query window. This is provably asymptotically optimal. Experiments show that the PR-tree performs similar to the best known heuristics on real-life and relatively nicely distributed data, but outperforms them significantly on more extreme data.

Organized by IT University of Copenhagen

(jd@itu.dk / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Q-SEMINAR

Ferromagnetic Ordering of Energy Levels and Applications

Prof. Bruno Nachtergaele, UC Davis

Fri Dec 10 2004, 13:15

Abstract

The ferromagnetic Heisenberg model is conjectured to possess the property of Ferromagnetic Ordering of Energy Levels (FOEL): the smallest eigenvalues in the invariant subspaces of fixed total spin, S, are monotonically decreasing in S. I will present a proof of this conjecture for the one-dimensional case and discuss generalizations to other models and several applications.

Organized by B. Durhuus

(kuimf / kuimf)

MAT-NYT

Danish Center for Applied Mathematics and Mechanics

Seminar

Mechanics of cytoskeletal actin networks

Dr.ir. Patrick R. Onck

Fri Dec 10 2004, 15:00

Abstract

Many fundamental processes in life involve the sensing and generation of forces inside living cells. The key cellular component that is responsible for this is the cytoskeleton. The cytoskeleton consists of three types of polymer fibers, made from different proteins and with different diameters: actin microfilaments, intermediate filaments and microtubules. Like other biopolymers, the cytoskeletal fibers are semi-flexible polymeric chains which form low-density networks in the presence of appropriate cross-linking proteins. The conventional view on the origin of stiffening is the nonlinear response of individual filaments when subject to stretching, supplemented with an affine deformation assumption for the behavior of the network. In this presentation an alternative explanation will be proposed that is based on the reorientation of the filaments into the direction of maximum applied stretch. A 2D finite-element, periodic cell model will be used to show this.

Organized by Danish Center for Applied Mathematics and Mechanics

(bec@mek.dtu.dk / dmfeditor)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Specialeforedrag

Næstenkommuterende matricer

Kenneth Valbjørn Rasmussen

Fri Dec 10 2004, 15:15

Abstract

Organized by S?ren Eilers

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

MATEMATISK AFDELING

KØBENHAVNS UNIVERSITET

Ph.D. DEFENSE

Norms of units and 4-ranks of class groups

Tommy Bælow, MA

Fri Dec 10 2004, 15:15

Abstract

Organized by Ian Kiming

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Seminar I

An elementary introduction to rigorous quantum mechanics, I

Pierre Duclos, PHYMAT, Université de Toulon et du Var and Centre de Physique Théorique, Marseille

Tue Dec 14 2004, 13:30

Abstract

This mini course is three fold: (i) showing to physics students the interest of having sound mathematical tools to do quantum mechanics (ii) making the mathematics students realize that there are beautiful mathematical problems coming from quantum mechanics, and finally (iii) treating the problem of three quantum charged particles on the line interacting through delta potentials.

In this, the first, lecture I shall be concerned with points (i) and (ii), introducing the Hilbert space of states of a quantum system, the Schroedinger equation governing these states and the connection between the spectrum and the dynamics of such systems. The second lecture will be devoted to problem (iii) and its applications to today's physics.

Organized by Horia Cornean

(dmfeditor / dmfeditor)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Seminar II

An elementray introduction to rigorous quantum mechanics, II

Pierre Duclos, PHYMAT, Université de Toulon et du Var and Centre de Physique Théorique, Marseille

Wed Dec 15 2004, 13:30

Abstract

This mini course is three fold: (i) showing to physics students the interest of having sound mathematical tools to do quantum mechanics (ii) making the mathematics students realize that there are beautiful mathematical problems coming from quantum mechanics, and finally (iii) treating the problem of three quantum charged particles on the line interacting through delta potentials.

In the first lecture I shall be concerned with points (i) and (ii), introducing the Hilbert space of states of a quantum system, the Schroedinger equation governing these states and the connection between the spectrum and the dynamics of such systems. The second lecture will be devoted to problem (iii) and its applications to today's physics.

Organized by Horia Cornean

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AALBORG UNIVERSITET

Seminar

Fourier theory for symmetric spaces

Henrik Schlichtkrull, University of Copenhagen

Thu Dec 16 2004, 13:00

Abstract

A symmetric space is the quotient space G/H of a Liegroup G with a subgroup H, which is the group of fixed points for an involution of G. For such spaces one can define a theory of harmonic analysis, which generalizes the classical theory of Fourier series and Fourier transforms.

I will describe the Plancherel theorem for this situation, which is the statement that the Fourier transform is an isometry of L2-spaces, and if time permits also a Paley-Wiener type theorem, which describes the image by the Fourier transform of the space of compactly supported smooth functions on G/H. (results obtained in joint work with Erik van den Ban, Utrecht).

The talk is aimed at mathematicians in general. The talk is not too specialized for mathematicians within other mathematical disciplines than the scientific area of the talk. Students are very welcome, however, they may not understand all of the talk unless they have specialized within the area of the talk.

Organized by Ulrich Fahrenberg

Lisbeth Grubbe Nielsen 2004-12-09 11:56:06

(dmfeditor / dmfeditor)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Analysis Seminar

An upper bound for the first eigenvalue of the Laplacian on Riemann surfaces

Jimi Lee Truelsen Dept. of Mathematical Sciences, AU

Thu Dec 16 2004, 16:15 - 16:15

Abstract

To a compact Riemannian manifold there is associated a natural Laplacian, and it turns out that the eigenvalues of this operator yield information about the geometric properties of the manifold. ¡br¿ In the case of a Riemann surface with a conformal metric Yang and Yau have established an upper bound for the first eigenvalue λ_1 depending on genus g and area A only:

$$\lambda_1 \leq \frac{8\pi(g+1)}{A}$$

This result is in particular interesting for the quotient space $\overline{\Gamma \backslash H}$ where Γ is a Fuchsian group of the first kind and H is the Poincaré upper half-plane, and we shall consider a couple of applications.

Organized by Bent Ørsted

(auimf / auimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

KØBENHAVNS UNIVERSITET

Q-seminar

Entanglement and Majorization

Peter Harremoes, Dept. of Mathematics, University of Copenhagen

Fri Dec 17 2004, 13:15

Abstract

During the last decade there has been a change in the view of entanglement. It has turned out that entanglement can be considered as a resource, which can be used in super dense coding, quantum teleportation and quantum computing. One may ask how to distill enteanglement into a more pure form, how to manipulate it etc. It turns out that majorization plays an important role in these questions. In some cases one entangled quantum system may catalyze the distillation of entanglement in an other system, and this can be described by a version of majorization called the trumping relation. During the lecture these ideas will be discussed and some new results and simplifications of the theory will be presented.

Organized by B. Durhuus

(kuimf / kuimf)

MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AFDELING FOR STATISTIK OG OPERATIONSANALYSE

KØBENHAVNS UNIVERSITET

SEMINAR IN MATHEMATICAL STATISTICS AND PROBABILITY

On relations of partial inversion to closing paths in graphs and factorizations of densities

Nanny Wermuth, Chalmers/Göteborgs Universitet

Fri Dec 17 2004, 14:15

Abstract

Algorithms for computing the inverse of invertible square matrices have been known for a long time. We look at properties of two operators, one that we call partial inversion and another that finds structural zeros, i.e. zeros that appear for all memebers of families of matrices, after partial inversion of a symmetric matrix relative to a given triangular decomposition. The results are applied to deriving some consequences of so-called triangular systems. These describe stepwise generating processes either for covariance matrices or for joint densities so that simplifying structures are captured by missing edges in graphs.In graphs induced by a given generating process a missing edge means in the linear case a structural zero in parameters of induced linear models and in the density case the factorization of some density.

Organized by Anders Rahbek

(kuimf / kuimf)

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MAT-NYT

INSTITUT FOR MATEMATISKE FAG

AARHUS UNIVERSITET

Algebra Seminar

A new Geometric Invariant Theory construction of toric varieties

Alastair Craw SUNY at Stony Brook

Mon Dec 20 2004, 14:15 - 14:15

Abstract

I will describe a new GIT construction of smooth projective toric varieties (joint work with Gregory Smith). The advantage over the traditional construction due to Audin and Cox is that the toric variety is now constructed as a moduli space of quiver representations. In certain cases this enables us to calculate the derived category in a manner that is natural from the point of view of birational geometry.

Organized by Anders Skovsted Buch

Anders Skovsted Buch 2004-12-05 12:39:56

(auimf / auimf)

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